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THE
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Rail Road News.

Alabama and Tennessee Railroad.

The chief engineer, Lewis Troost, Esq., of this road has presented an able report on the subject to J. W. Lapsly, Esq., the President. The Report is principally taken up with the resources of the country through which this railroad will run, and the amount of transit and freight likely to pass over it, so as to make it pay. This should always be the first consideration taking into account the probable future increase of business, as the necessary result of new and economical means of communication. This Mr. Troost has done; the productive capacities of our Southern States, are incalculable. Railroads and plank roads will develope a vast amount of wealth by infusing new life and vigor into the inhabitants of those regions through which they pass. This has universally been the result of good roads in every country. The capacities of the Southern States are altogethersuperior to the North, because of a more advantageous climate, but without good roads, climate and soil may all be of no avail to make a country prosperous as a surplus producing country. It has been acknowledged that if there were good rail roads in the East Indies, the *raising of cotton* to compete with America would now be farther advanced than it is; for want of good roads the price of transit, places India cotton far in the wake of a payable competition. We therefore say to our Southern friends, look well to good railroads, plank, and other roads. The right spirit is awakened, we know, but do not have too extravagant ideas of a great and sudden revolution of accruing benefits. Let there be a steady but determined and cautious perseverance, and in a few years your ledger leaf of profits will exhibit a well ink-marked ballance sheet.

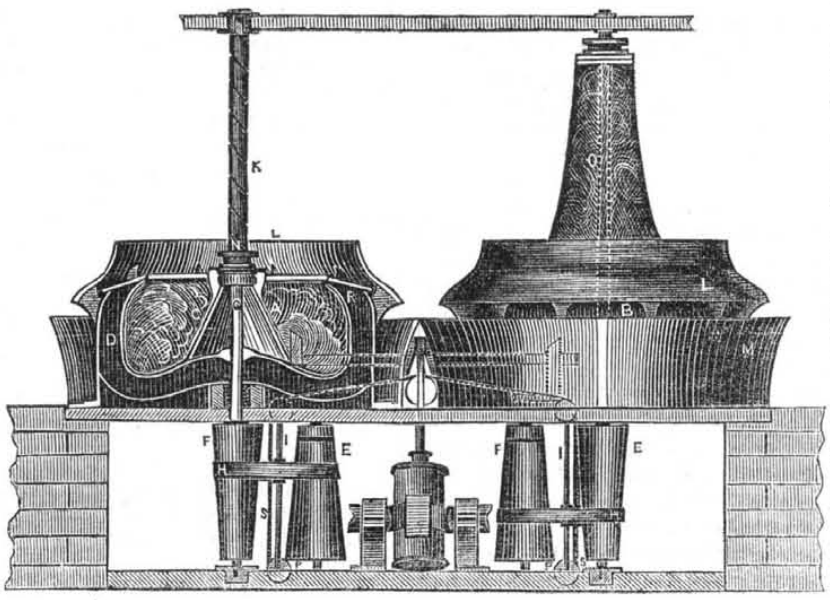
Tunnel on the Baltimore and Ohio Railroad.

The Great Tunnel, of the Baltimore and Ohio Railroad, is one of the greatest works of civil engineering now going on in the world.—It is a few miles from Morgantown, West Virginia, and is through a mountain (for a rail track) a mile and a quarter wide. There are already sunk three shafts, some 20 by 19 feet, and from 175 to 185 deep. Hundreds of shantees are now reminding one of a new town in California.

The shafts being now completed to the perfect level of the road, a large number of hands are enabled to go to work, tunneling through the rock—all of which has to be brought up through the shafts, except at the two extremes or sides of the mountain. They work day and night—one set during the night, and the other by day. The works of the Baltimore and Ohio Railroad, in passing through Western Virginia and the Ohio Valley, will be among the proudest works of the age.

The English railways are said to "have ruined the sailing coasters, cashiered steamboats, superceded canals, and used up navigable rivers."

NEW MACHINERY FOR DEPURATING SUGAR AND OTHER SUBSTANCES.---Figure 1.

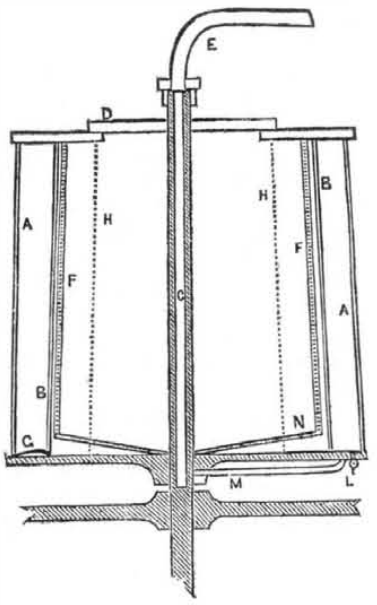


This improvement is the invention of Mr. R. A. Brooman, the great gutta percha inventor, of London. It is patented there, and measures have been taken to secure a patent in America. The real principle of the invention is the employment of a centrifugal force, which throws the moisture out and suffers it to escape, while the substance from which the moisture is to be extracted is prevented flying from the centre. Figure 1 represents two machines constructed upon this principle; A and B, are two pans, containing the substances to be purified. They are mounted on two shafts, O and G, and placed within receptacle, D—for the extracted matters. E and F are cone pulleys, on the lower ends of the shafts, connected by a driving band between each pair to give motion to the pans, gradually accelerating the same. Loose pulleys are placed on the top of the upper cones, to stop the motion when required. The driving cones, may be connected to the engine shaft by spur gearing to give them a steady motion. The driving bands, H H, pass through guide forks which are moved up and down on the rods, I I, by means of an endless cord, S S, passing over the pulleys, P P, and the cord is represented by the dotted lines as passing over pulleys,—the spindle of one being operated by a wrench, to actuate the cord and operate the forks so as to raise and lower the bands, H H, as required. The pan, when first loaded, has a slow motion. C, in the inside, is a loose bag of a peculiar form for unloading. The outer edge is secured to the flange, R, and the inner edge to the ring nut, N, which fits the screwed spindle, K, which is secured on the pan shaft. To unload the contents, the nut, N, is held while the spindle turns with the pan, carrying the nut and bag upwards, the centrifugal force of the pan filling the bag. The guard, L, guides the extracted matters into the bag, as the centrifugal force, makes the said matters, impinge on the guard. They are then deposited in the receptacle, M. On releasing the nut, N, the bag is run down to load again.

Figure 2 represents a vertical section of the rotating drum. It is double: A the outside, and B the inside one. The upper part of the drum has a central opening closed by a cover, D, through which the substances to be purified and dried are introduced, to rest on the false bottom, N. F is a wire cloth fitted in the interior of the drum, to permit the free escape of the moisture. The drum rotates on a spindle; C is a hollow shaft attached to a joint at the top, for the admission of steam by the pipe, E. The channel in the hollow shaft is connected with the space between the drums, A B, by the pipe, M.

The substances to be depurated are placed in by the opening at the top, and the steam turned on, while at the same time slow rotary motion is imparted to the cylinder, until all is heated, when the motion is increased, and then the moisture is thrown out through the wire-cloth screen, F, by the centrifugal force. The moisture is received in the space below the false bottom, E, and is then drawn off by the pipe and tap at G. Water may then be introduced for farther purification, and the same process, as described, continued until perfect purification is effected. In some cases it may be advantageous to admit steam to the

Fig. 2.



substance. The screen, F, is then made smaller, as denoted by the dotted lines, H H, and the steam pipe may be so arranged as to admit steam on the exterior. The steam enters the substances to be operated on, and is at first condensed, then the water is driven off by the centrifugal force, until the whole becomes heated and the steam has penetrated into the interior, when it may be shut off, and the operation is soon completed. L is a cock to let off the water of condensation from between the drums, A B.

In figure 1 the manner of imparting mechanical motion is principally shown, but there may be various ways to do this as good as th t represented, only the motion at first, until all is heated, must be slow. For sugar, but little water should be used at once.

The principle of this invention is the feature we design to set forth, so as to bring it into notice, as we deem it an important one, in the sugar refining business, especially. This improvement can easily be tested on a small scale. The principle of it, viz., throwing off the moisture by centrifugal force, we know, is philosophical and correct, and in our opinion worthy of much attention.

Useful Receipts.

Coffee for Weak Stomachs.

Place a quarter of a pound of ground coffee in a jug, pour a pint of cold spring water thereon, and let it stand twenty-four hours; then strain off the clear extract, which preserve in a well corked bottle. When you wish for a cup of coffee, boil half-a-pint of milk, to which add a table-spoonfull of the cold extract.

[The above is from an exchange. The coffee thus made, although not very cheap, is very delicious.

To Destroy Insects on Vines.

Sprinkle the vines with boiling hot soap suds.—[Ex.

[This is not our view nor would we like to put it forth as it is. It is correct, however, according to its title, but it should have told the whole truth and addded, "this will kill the vines likewise."

A Successful Factory.

The Elkton (Md.) Democrat describes Lord's cotton factory, situated upon the Great Elk, four miles north of Elkton, and says:

The most gratifying evidences of the success with which Mr. L. is conducting his operations, met us at every step of our progress through the establishments. He is enlarging his operations, extending his buildings, adding a new water wheel, introducing new and highly improved machinery, at immense cost, but which will amply remunerate him in the saving of time, material and labor. About one hundred persons are employed in the establishment, who work twelve hours per day. This factory manfacturers table diaper only, and turns out fifty pieces per day, of rich and beautiful figure, which finds a ready sale in all our cities, and would do so, even if the quantity were greatly increased.

The Iron Business of New York.

On the Saranac river there are forty-one forge fires. Of these, twenty were in operation on the first of January last, and of these twenty, fourteen have since suspended work. These twenty fires employed 255 hands, and made 3,000 tons of bloom, and 550 tons of bar iron annually. They required over $100,000 worth of agricultural products every year, and the capital they employed was $225,000. Out of eighteen tuyeres on the Salmon river, ten are now in use. Of the fifty-four on the Ausable, a small number are in operation.

Whale Shooting.

The ship North Star, of New London, Ct., is about to sail on a whaling voyage, and is provided with patent guns of Capt. Brown, for shooting right whales. They are said to be very efficient, and to throw harpoons and lances with unerring aim.

Late arrivals from Newfoundland report that a large plain of unbroken ice, nearly two hundred miles in length, has been seen and circumnavigated in latitude 46. This is directly on the great highway between Europe and the United States, and it is feared the obstruction may prove disastrous to shipping.

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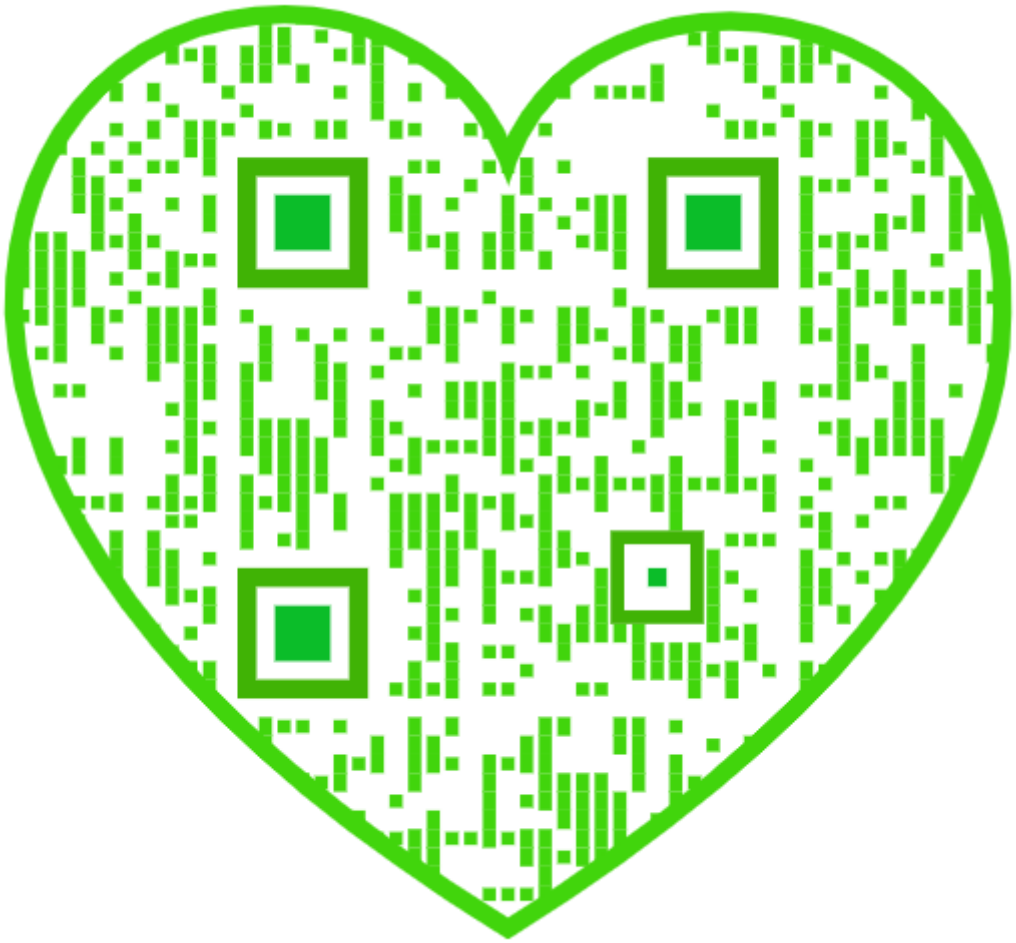

Miscellaneous.

Southern Manufactures.

The Albany (Ga.) Patriot of the 11th inst. gives the following description of the factories in the city of Columbus, in that State:—

The Coweta Falls Manufacturing Company's establishment occupies a large brick building, containing 2,500 spindles, which make from 1,400 to 1,800 lbs. of thread per day; 44 looms, making 1,800 yards of heavy osnaburgs per day; 34 cotton cards, 3 wool cards and one wool jack. They also manufacture a considerable quantity of linseys, which are more profitable than osnaburgs and yarns.—They employ from 115 to 120 boys and girls, from twelve years old upwards. Average wages—Superintendent 1,000 per annum; overseers $30 to $60 per month; weavers $15; carders $8; spinners $7 50. Power—One of Rich's centre vent wheels, five feet diameter, capable of carrying as much more machinery. Profits on investment 10 to 15 per cent.

Near this establishment is Carter's Factory a large brick building, six stories high; cost $10,200; privilege 6,000; calculated for 200 looms and 10,000 spindles. Estimated cost when completed $100,000; will employ from 300 to 400 hands.

Not far from this building, is the Howard Manufacturing Company's establisment. The building is of brick, 50 by 125 feet, six stories. It contains 5,000 spindles, 103 looms—40 more to be added. Entire cost $100,000. They manufacture 15,000 yards of cotton osnaburgs, sheeting and shirting per week, and 400 to 500 lbs. thread; employ 100 hands, from twelve years old upwards, one-third of whom are males; wages from 12 to 75 cents per day for common hands; assistants, $1 to $1 25; overseers, from $2 to $2 50; superintendent, $900 per year. Consumption, 1,200 bales cotton.—Past profits, under some difficulties, have varied from $34 to $100 per day; estimated future profiits, 20 per cent. on investment. There is an extensive machine shop connected with this manufactory. We examined some bales of cloth made by this establishment, and found them of a very superior quality. The hands, male and female, had a general appearence of cleanliness, health, and contentment. The proprietors of the manufactories have made arrangements for preaching, Sunday schools and a daily free school, for the operatives and their families.

We next visited Winters' Palace Mills. This is a large brick edifice, of six stories, occupied by a machine shop, four runs of mill stones—two for wheat and two for corn—with all the necessary flouring apparatus, capable of turning out from 80 to 100 bbls. of flour per day. The entire cost was stated to be some $50,000. Ten thousand bushels of wheat had recently been purchased in Baltimore, and was being made into flour at this mill.

Near this establishment, is one which is rightly termed "Variety Works," sawing lumber, planing, making tubes, pails, bedsteads, window blinds, sash, &c., &c., all by machinery adapted to these purposes. This is doubtless one of the most profitable establishments in Columbus.

These several establishments are situated on the east bank of the river, and are propelled by water, taken from the great conduit, which has been constructed of stone, to receive and retain the water of the Chattahochee river at a sufficient elevation to afford the necessary power. The head of water thus furnished, is from 10 to 14 feet. This conduit is calculated for supplying the power for many other manufactories.

There are two iron foundries in Columbus, which turn out a large amount of castings and machinery for mills, steamboats, &c. They employ a steam engine.

The City Mills, in the upper part of Columbus, is a large wood structure, occupied by four sets of mill stones, two for flour and two for corn—and extensive flouringworks.

On the river above the city, are several establishments, which we had not the pleasure of visiting; among them the Rock Island Paper Manufacturing Company. Capital employed, $40,000, to be increased to $45,000, to complete the machinery. They now manufacture 1,000 lbs. when the machinery is completed. Cost of rags and other materials, from 1 to 3½ cents per lb. Price of paper from 10 to 12½ cents per lb. Employ 7 girls, 2 boys, 13 men, and 1 teamster. Wages—Girls, $8 per month; foreman, $100; machinist, $60; two operatives $40 each. Main building 75 by 39 feet, three stories, besides finishing room, warehouse, &c.

In all cases where we have given the wages, the parties employed board and lodge themselves.

Mobile Cotton Factories.—The extensive buildings, for the future operations of this company, says the Mobile Advertiser, are located four and half miles from the city, on Bayou Durand—commonly called Dog River—nine miles from its entrance into Mobile Bay. Steamboats can land freight and receive it within fifty yards of the factory. This location was preferred to one in the city, because, being in the pine woods, all danger from epidemics to which the city is sometimes subject, was avoided—thus enabling the company to continue their business through the year; and it also removes those engaged in the factory from city influence—which is not always favorable to good order and industry. For general health, no more favorable location can be found anywhere. After all the improvements contemplated are completed, "Fulton," the name adopted, will prove one of the pleasantest villages in the State.

The factory buildings are built in the most substantial manner, of yard-burned brick, and appears to combine, in the design, everything necessary for a complete cotton-factory. The main building is 182 feet long by 54 wide—110½ feet three stories, and 71½ only two stories. There are 195 windows and 4,750 lights in the house. The roof is well covered with slate, laid on sheathing tongued and groved, and as tight as a floor. It is fronted by a square tower four stories high, 17 by 18 feet, and 70 feet to the top of the belfry. The brick consumed amounted to 750,000. Cost of factory $27,000. The three story building will be occupied—the first by 176 looms—the second by 40 carding machines—the third by 5,040 spindles—with such other "fixings" as may be necessary; the work, &c., &c., to be transposed from one room to the other by machinery. A large water trank is built in the third story, with hose to carry water to all parts of the building. The water is forced into the tank by the engine. The two story building is appropriated for the engine room and machine shop on the first floor, and the second for a sizing room. The machinery of the mill, which is just being opened and put in place; looks to be of the most approved kind, and was got up by the Matteawan Company in the very best style. When ready for work, the mill will require 200 operatives—three-fourths females—and will manufacture, when in full operation, 6,000 yards of yard-wide sheeting per day.

The motive power consists of two engines of 75 horse power each, low pressure, twenty inch cylinders four feet stroke, forty revolutions per minute; four boilers, thirty-six feet long, which are located in an adjoining room to that which contains the engine. The smoke stack is eighty-two feet high, ten feet square at the base and five by six at the top, and located thirty feet from the mill. The smoke is taken from the boilers to the chimney under ground.

Postage Reform.

Rowland Hills' important movement in England, in bringing about cheap postage, has proved a great blessing to the people, and the government revenue from post office, in that country, has increased. Our government seems to be very slow in entertaining proper views of this subject, and every attempt to get a reduction of our heavy rates, seems attended with great difficulty. Postal reform is much needed. The facilities for travelling and transporting the mails have been much improved and increased within a few years, and it is only a reasonable demand of the people that there should be a considerable reduction in postage rates. They are much too high. The experience of the British post office furnishes us with all the results that can be required to justify a reform. The extent of our country does not change the nature of the question in the least.

Under a reduced postage tax, we should have a large revenue. Let the reform be decided upon. Barnabas Bates, the champion of cheap postage in this country, is making strong efforts, with little encouragement from our wise legislators, to produce this important and much needed reform.

Mr. Editor:—If a reduction of postage is to be made upon the purchase of stamps, the minimum sale thereof should not be above the economical means or wants of the public. It would not be democratic to give the benefit of the discount to a few only, or to such as should retail them as merchandise. One advantage of their general use would be to lessen the labors of and consequently the expenses of the department. They are frequently convenient, for a deposit of a pre-paid letter, after office hours. Each postmaster might consult the convenience of his office and the wants of the community, as to the minimum amount they should be sold, at their respective offices. Pre-investment in stamps might add to the frequency of communications. The postal arrangement should be afforded as cheaply as possible to the people, and the happiest results may be expected therefrom. Friendship will be more cultivated and strengthened, contentment and happiness will be added unto and enlarged thereby. A more general knowledge of the capacities, conditions and wants of the community, will thus be constantly acquired. Out of a cultivated and friendly correspondence will spring a union of sentiments for the public weal. An increase of friendship and esteem, extensively, will add to the stability of our Union. A Country Postmaster.

Log and Board Measure.

In No. 39 of the Scientific American, you give a table of board measure, which is valuable but not entirely correct. I therefore take the liberty of sending you the true mathematical rule for calculation: it is this—to double the square of half the diameter of the log (a 12 feet log) which gives the number of feet of plank which that log will make; or, which will amount to the same, multiply the diameter by the radius, will give the same result: thus, in your table, a log of 12 inches diameter gives 72 feet of plank, by the rule the half diameter is 6, the square of which is 36 inches, and doubled is 72 feet, or the diameter 12×6=72. A 12 feet log of 14 inches, by the rule, gives 98 feet—which is correct; your table gives 100 feet, which is too much. The above rule is mathematically correct, and I know it to be correct in practice, having tested it in sawing many thousand feet of plank a few years ago.

M. W. B.

Coal Trade of Ohio.

The amount of coal now annually mined on the banks of the Ohio and the tributaries cannot be less than thirty five millions of bushels, worth, at the points of consumption, not less than two and a half millions of dollars. The rate of yearly increase is probably not less than 20 and perhaps 25 per cent. At New Orleans, this rate of increase is said to be more than 33 per cent. per annum; and the yearly consumption of that city is said to have reached 3,000,000 of bushels. There are no coal mines between Cape Horn and Vancouver's Island, and the Panama and San Francisco steamers are supplied with Liverpool and Pennsylvania coal at a cost of some $30 per ton, and by railroad or canal, the Ohio coal can be furnished at less than one-third of that price. We may look by and by for an enormous increase of this consumption. England, with not one eighth of the coal lands we have in the United States, uses twenty times the amount raised from our coal mines, but the sale by and by must be enormously increased here, and perhaps diminished there.

Twenty years ago, says the Louisville Journal, the idea of using coal as fuel on river steamboats was regarded as preposterous, and now it is a question whether this will not, in a few years be the fuel extensively used on boats between Pittsburg and New Orleans.

New York Directory.

We are indebted to Chas. R. Rode for a copy of his new city directory, containing all the removals and changes which have taken place during the current season. We believe that no directory of this city has, of late years, been issued at so early a date as this, and the public are much indebted to the enterprizing publisher for the indefatigable exertions which he has manifested in producing such a noble volume for reference. It contains eighty-four thousand four hundred and ninety-six names, being something like sixteen thousand more than were ever before furnished in a New York Directory, and is sold for the low sum of $2, the price being 50 cents less than the one published last year. Mr. Rode has, no doubt, been compelled to struggle against the tide of adverse fortune in this undertaking, and we trust that a generous public will extend to him encouragement commensurate with the zeal and energy which has characterized his efforts. He has no doubt brought down upon himself the venom of his antagonist in the field, but since he has corrected the abuse which has grown out of the delay heretofore experienced, when the Directory has been over two months coming out, we have no doubt but that the public will encourage him to still further exertions when the year comes round, to furnish the Directory still earlier. It can be had at the office, No. 66 Cedar street, opposite the Post Office.

Dictionary of Mechanics, Engine Work, and Engineering.—Number 12 of this work, published by D. Appleton & Co., contains further details of engines and rules for constructing. It also has some rotary engines and steamboat engines. It is a very good number.

Remington's Bridge.

We perceive by many our Southern exchanges, that Mr. Remington is creating as much excitement by his bridge, in Alabama, as he did in London. He has erected one or two large structures which are subjects of admiration. He has erected one in Montgomery, Alabama, that was opened for travel on the 8th inst. The span is 436 feet, and the track is 10 feet wide. It is without hand rails, and is described as appearing at a distance like a slight ribbon or shaving of wood flung across a ravine—apparently too frail to bear the pressure of a bird, but proved to be capable of bearing almost any amount of weight that can be placed upon it. Hundreds of people crossed it on the day it was opened, who were completely convinced of its strength.

It is with feelings of regret that we announce the death of Mr. Wm. Burns, one of the Editors of the New York Sunday Dispatch. He died at his residence in this city on the 21st inst., after a brief illness produced by a rush of blood to the head, leaving a wife, one child, and a host of warm friends, to mourn his early departure. Mr. Burns was a young man of strong social qualities, combined with a clear and brilliant intellect, and his writings were marked with these characteristics. In this sudden death we are forcibly reminded of the fragile tenure of life, for he was but in the prime days of manhood when the hand of the destroyer fell suddenly upon him.

The article on Parker's Water Wheel, promised this week, is delayed till next week, owing to its great length.

Lead mining in the west has been almost abandoned, the miners having turned their backs in disgust on the base metal and started for the gold mines of California. The consequence is, that we are now importing a considerable quantity of lead from Europe.

Anatomical investigation has not exhibited the slightest difference of organization or construction between the vocal organs of the most harmonious and most discordant singers. All distinction appears to be based on the amount of nervous energy existing.

It is now ascertained, beyond a doubt, that alcohol, when taken freely, is directly absorbed into the blood-vessels of the stomach, without undergoing any change in that organ.

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Philosophy of Mechanics.

No. 5.

FORM OF SHIPS—WAVE LINES.

Among the many plans which have been brought forward from time to time, to produce the best form for increasing the speed of sailing vessels, the experiments of Scott Russell and the conclusions arrived at by him, possess the greatest merit, because he has clearly set forth a fixed principle of construction:—this is called the "Wave Principle." It relates to the formation of parallels as adequate to the resistance on both ends of the vessel; in other words, several lines of floation formed in accordance with the form of the *waves*. This form of construction has been applied in the construction of British steamships, and also the new American steamships, and with great success. A few years ago vessels were built on the old principle of a nearly straight water line, excepting a little in the run of the ship, but no hollow line in the bow, rather convex. The wave principle has a long sharp bow with hollow lines, somewhat concave, like a razor. A committee was appointed a few years ago, by the British Association, with Scott Russell as its Chairman, to make experiments, so as to determine the form, and also the best proportional of vessels' width. These experiments demonstrated the fact that "the greatest speed that was acquired, the greater should be the length of the vessel, and that the vessel should merely be of the breadth necessary to enable the engines to be put in and to stow away the requisite cargo. The greatest width of the water line was found to be the best placed two-fifths from the stern, instead of *before* the middle, as was the way of old, or at the middle, as assumed by more advanced theorists." Instead of the old cod head bow, the edge of the razor was presented to the waves, (and here let me say this has been found to be the best form, as discovered by Farraday since then, for chimney caps.)—Instead of the old fine line abaft, Scott Russell discovered that a fuller line should be used abaft (a different plan from the "important discovery" to which I have alluded to in previous papers.)

As Marine Navigation is the grand subject of national rivalry, especially between England and America, great attention should be directed to the form of the vessels and all connected with them. The British have paid great attention to it, and with much success. The small steamship Viceroy, which lately arrived from Ireland, although her passage was longer than the large Cunarders, yet no one could look upon her without admiring the beauty of her build, and would be ready to say—"that is in model the perfection of a steamship." Fortunately for America, we commence the race of rivalry with England, having much made to our hands, for which we are indebted to her, but science is universal property—one nation at the present day, borrowing from and lending to another. Along with the form of steamships, the engines, paddle wheels and boilers, are as essential to speed as a wave line, or great length, and great improvements have been made within the past fourteen years, especially in the boilers and engines. Formerly the boiler flues were constructed of great length, so that the smoke was kept winding round and round in the flues and at last was allowed to escape with difficulty. Now, however, they have adopted the plan of getting as much fire as possible in the shortest space of time,—and this had been accomplished by imitating as nearly as they could the locomotive engine boiler, by having tubes of thin metal which would evaporate a much greater quantity of water in the same time as flues of the usual thicknees; now, also, instead of taking the smoke a long dance they use short flues of four to six feet in length, and by having a great many of as thin metal as possible, they heat the greatest quantity of water, and have the additional advantage of keeping the metal cool, in consequence of which a boiler of smaller extent and surface is of much greater efficiency, with less weight of metal. The next point of improvement was in the engine; in the construction of which, however, there have been less change than in other matters. The greatest changes which have been made within the last ten years consisted in the employment of greater quantities of wrought iron in the constuction of the engines, instead of the mass of cast iron formerly used. This was the only great change,—for the newest Halifax steamers were still fitted up with the old fashioned or lever engines,—and so are the Collins' Line. The next improvement consisted in working steam expansively to a much greater extent than heretofore. It was only within the last ten years that they adopted this principle; the effect of which was that instead of completely filling the cylinder with steam, they filled only to the extent of one-fourth—a volume of steam not of course of equal density, but by which they get two-thirds of the work done and at one-fourth of the cost. The next improvement has been made in the paddle; not so much, perhaps, in the wheel itself, but in driving the paddle-wheels faster. The old maxim which was, a good horse going 2½ miles an hour could not draw advantageously at more than 220 per minute, and that as the steam-engine was only a substitute for horses, and reckoned as so much horse-power, it ought not to go faster than 2½ miles per hour—and this one thing had kept them back for half a century, for 2½ miles an hour is only 4 feet per second, whereas steam at 15 lbs. pressure moves at 1,100 feet per second. The piston is now often moved at the rate of 250, 270, 300, and more sometimes, per second. The engines of the Cunard and the Collin's line are built on the same principle, and the object and aim of them is compactness and great power, with plenty of steam at a moderate pressure, from 7 to 10 lbs. Great improvements will yet be made, both at home and in England, in steamships, both in the build of the vessels, and the application of the power—the end of improvement is not yet. There is one thing, however, which is self-evident, and of great moment to the world, and that is, the only two great marine nations on the face of the globe, are the Mother and Daughter, both speaking one language—they, combined, could swallow up in a few months, all the other navies of the world.

Railroad Accidents.

Whenever trains in motion have run off the track or meet with obstructions, resulting in injury to passengers, it is well known that in almost all cases those in the forward cars have been the sufferers. Cases have occurred where an engine has been nearly smashed to pieces at the head of a long train, and persons in the last car were under the supposition that they had been merely stopped at some way-station, so slight to them was the concussion. In the accident at Princeton about a year since, two cars immediately before that in which was the writer were completly locked, dove-tailed together, their entire length, causing death to two and severe injury to many passengers, and yet in this third car no person was even bruised; old travellers generally select the rear of a train from an opinion of its greater safety, and it seems to the writer a little singular, with the light of experience so long before them, Railroad managers have not taken more effectual means to guard against the force of concussions.

As no one seems disposed to move in this matter the writer will venture to throw out some suggestions for the investigation of the public.

First: That not only the front and rear of each car be provided with more effectual fenders than those now in use present, but that there be run between the baggage and second-class car a fender car, expressly constructed for the purpose, and composed of masses of springs, or of properly combined materials suited to deaden the force of collsions. For a sufficient inducement the inventive genius of the country would produce the thing desired; and in view of accidents, where Companies would be held liable, motives of economy, if not humanity, should prompt the offer of such inducement.

Second: That the platform and frame-work of cars be constructed of iron. Cars thus constructed if properly padded and cushioned interiorly, would save the passengers from bruises in case of collision. They would also be protected at the top and sides by this frame-work, which would give to outer force or pressure, instead of breaking up into dangerous splinters; and under foot by a flooring which would let through neither snake-heads, broken rails, wheels nor axletrees. They would remain safe in case of almost any accident.

If found more expensive than those now in use, they might be termed Safety Cars, and extra prices charged to those who chose to occupy them: this would be readily paid by many, particularly if in addition pains were taken to deaden the sound of the wheels, so disagreeable to the invalid or those who wish to converse, through the construction of double floors, stuffed with cotton refuse, (an experiment all ready tried) and other suitable means.

Third: It is the custom to pass the Safety Cord (a rope intended to give the engineer notice when anything is wrong in his train behind him) over the roof of the cars instead of under and within the reach of the passengers; in case of breakage of an axletree immediate notice ought to be given. When it is considered that there are usually but two brakemen to half a dozen cars, and they may be thrown off or not be at the right spot at the right moment, this seems to be a great oversight.

Fourth: A system of signals through the motion of the arms or waving of an handkerchief or lanterns should be generally adopted and universally published, so that individuals not connected with Railroads may understandingly convey to those conducting a train in rapid motion, information of any danger which await them.

[We copy the above from the N. Y. Tribune, and believing it to contain some good suggestions, commend it to our friends as something worthy of exercising their ingenuity upon. The idea originated with a member of the Northern Patent Agency (No. 2 John street, N. Y.) who claim, by courtesy, the management of the matter, and we understand are now in communication with inventors and others interested, with a view of carrying it through.

Steamboat Accidents and the Bursting of Boilers.

In the article preceding this, our attention is directed to Railroad Accidents, and some remedies proposed for them. While the deaths by railroad accidents have been numerous, they have not been one tithe of those by steamboats, and the explosion of boilers. There is not a week passes over our heads which does not bring the news of some heart-rending accident of this kind. The explosion of boilers are accidents of so common an occurrence, that the public have become perfectly callous to the evil and crime of the same.—Last week the steamboat Griffith was burned on Lake Erie, and two hundred and fifty human beings were roasted or drowned by the accident. Good God! when are we to hear the end of such tragic occurrences, when shall we have just laws promptly executed to stop such legalized murders? Only think of it—250 of our fellow creatures enjoying perfect health, consumed alive amid devouring flames. If a foreign enemy was to land upon our shores and take the life of a single citizen, oh, how would the slogan of patriotism ring throughout every mountain and glen; but here we behold hundreds of our citizens killed, burned and drowned by the recklessness or cupidity of other citizens: and what is done to remedy the evil? Nothing—nothing. A coroner will call a jury, make a report—a wonderful sympathetic report to be sure, and there is an end of the matter. Who does not remember the thrill of horror which ran through our city, when the boiler at Messrs. Taylor's machine shop, in Hague street, exploded last spring. It was a dreadful thing to gaze on the mutilated corses of those who, in the midst of life and health, were almost in a moment sent from time into eternity. We well remember the report of the jury, but what has been done to those who were the direct cause of that murderous explosion? Nothing. They walk the streets as if no human blood was on the skirts of their garments. The only way to prevent accidents of this kind is by laws—good laws, and these are not worth a snuff unless administered with prompt impartiality. There is too much false philanthropy abroad. It is nothing more than sentimental conniving at crime. Every person who has had a son or near relative maimed or killed by an explosion, railroad accident, or steamboat accident, should sue the company or companies for damages. Widows and orphans made so by such accidents, should be maintained by the companies who were the causes of them. It is only by speaking to the pockets of the monied corporations, that such evils will be prevented, for this is the age of gold and it has no conscience nor feeling apart from dollars and cents. The best plans may be devised, and the best inventions brought forward to prevent accidents, these are all good and right, but they will not be adopted if they entail any extra expense, or unless they are to prevent some loss.

Tunnelling the Alps.

The passage of the Alps,, by Hannibal and his army, was long considered the greatest achievement of ancient generalship. After him, Napoleon astonished the world by performing the same feat—a feat which has been made famous by the painter and historian, but one which we have always considered inferior to that of Macdonald, in his famous retreat with the French army. But the feats of generalship must bow down to the genius of civil engineering:—the Alps are now to be pierced, and a highway for armies made through their granite sides, and the locomotive will yet wheel the traveller as safely beneath a thousand glaciers from the north to the south of the Alps, as if sitting at his own fireside. To accomplish this grand object, the Chevalier Mans, a highly accomplished engineer in the employ of the Sardinian government, has invented some very ingenious machinery for the purpose of boring, and transmitting fresh air to the tunnel. The tunnel is to pass under some elevated crests, where one can stand 4850 feet above the tunnel. Air is to be supplied by pumps worked by the mountain streams, conveying fresh air through tubes. The boring machine is also to be worked by machinery, and it is placed against the rock, projecting into it simultaneously four horizontal series of sixteen scalpels, working backwards and forwards by means of springs cased in, and put in motion by the same water power. While these are at work, one vertical series on each side works simultaneously up and down, so that together they cut four blocks, or rather insulate four blocks on all sides, except on the rock behind, from which they are afterwards detached by hand.

It has been already ascertained that each of the two machines, at the opposite side of the tunnel, will excavate to the extent of 22 feet a day, and it is estimated that the whole excavation will be completed in four years. The gallery to be perforated by the machines will be 13 feet wide by 7 feet high, and this once cut through, the bore will be enlarged by ordinary means to 25 feet in width and 19 feet in height, and a double line of rails laid. The estimated cost of this great tunnel is only 13,804,942f., or about $2,700,000. It is to be immediately commenced at the north entrance. The machines are constructed upon the principle of Foster & Bailey's, which was described in Vol. 3, Scientific American—the only machine of the kind adapted for boring horizontally, in a simple manner.

New Way of Catching Trout.

The Hallowell Gazette mentions a new method of taking trout in that vicinity, which has been practiced with success by some fishermen. It says—"A gentleman, of unquestioned veracity, informs us that he took sixteen fine trout out of a brook by tickling their tails, with his hand, and that he could have taken three times as many more if he had been disposed. In passing along, the gentleman noticed a deep place in the water, over which were two or three logs. He could see the trout in clear water—so getting on the logs and rolling up his sleeves, he cautously put his hand in the water and slightly rubbed the nail of his finger near the tail of the fish. The consequence was, they turned over on their backs in his hand, and he drew out the sixteen in two or three minutes."

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New Inventions.

New Machine for Making Shoemakers' Jiggers.

Mr. Geo. W. Thurston, of Uxbridge, Mass., has invented and taken measures to secure a patent for a very useful machine for making jigger spurs for shoemakers to lay out peg work. There is an improvement on the spur and the machine for cutting them. The spur is made in one piece with its two rims, which are cut by the machine, with the teeth cut on one rim opposite to the spaces on the other, so as to mark out the spaces for the pegs correctly. The teeth are cut by a burring tool set in the mandril of a turning lathe, and the new machine is constructed to move the metal of the spur to be cut, on a spindle, in such a manner as alternately to change and bring the rims below the burring tool at the right distance for each tooth, gradually raising the metal till the tooth is cut to the proper depth, then changing the position of the second rim, when the first is cut. This is a machine for making a small instrument, but on that account it is no less valuable to community, as it will enable the inventor not only to make a better, but a cheaper article than has hitherto been made.

Improvement in Daguerreotype Cases.

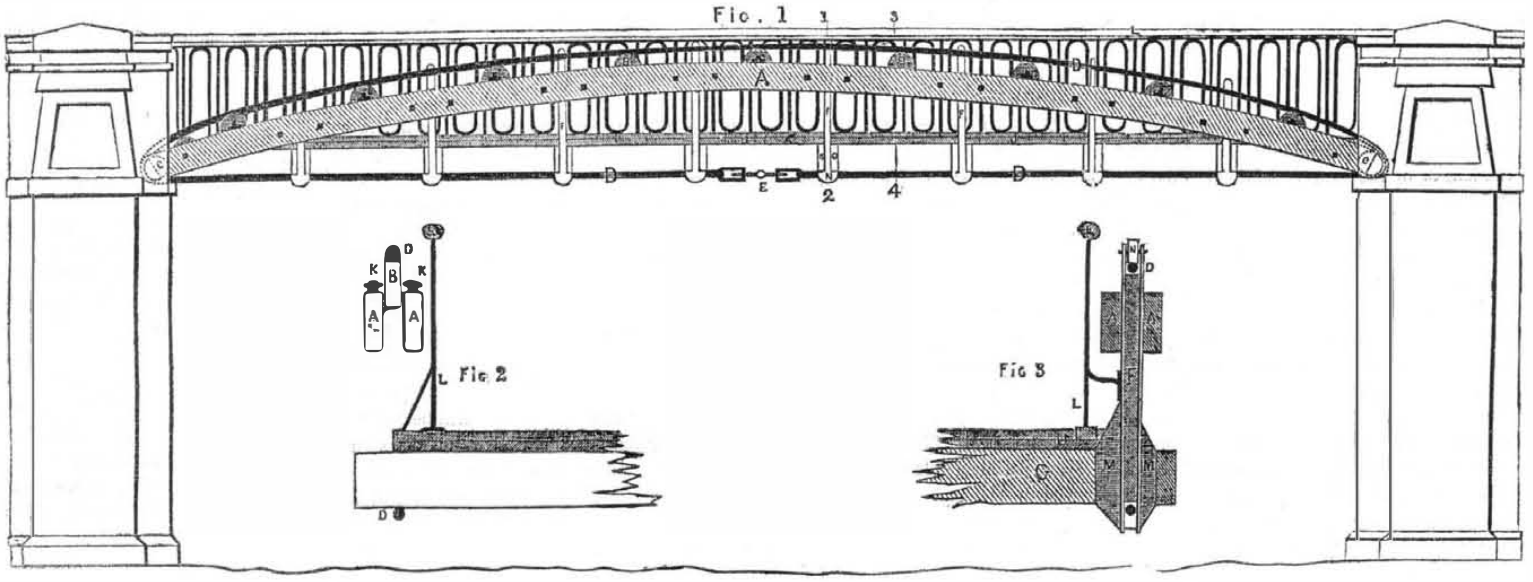
By referring to the list of patents issued January 22nd, 1850, on page 158 of the Scientific American, our readers will see the claim of a patent that was granted to a lady in Connecticut for an improvement in daguerreotype cases. We have had the pleasure of examining the improvements contained in that claim, and we think it one of the finest inventions of the age. The case is construeted in the form of a sugar loaf, the top and bottom both opening with a lid. At the lower extremity of the case is a cylinder of ground glass, which extends a little way into the case, and protrudes out about one half or three-quarters of an inch below it, even while the bottom lid fits snugly over it and rests against the morocco case. This glass cylinder is for the purpose of admitting light to the picture, which is placed in the bottom of and fixed thereon. At the top of the case about two and a half inches from the picture is inserted a convex lens of sufficient magnifying power to represent the object on the plate, of the size of life. All that is required to be done in exhibiting the picture, is to displace both lids of the case and hold the small end of the case to the eye, when the object inside will appear at a distance its natural size. The operation is similar in principle to the cosmorama but we believe the patent to be a valid one. For further particulars concerning the invention, address Jas. Curtis, Jr., Southfield, Conn.

Paine's Electric Light.

Mr. Young, the President of the Manhattan Gas Co., this city, dispatched twelve men to Worcester, last Tuesday, to examine into the merits of Mr. Paine's alledged discevery. The report circulated in our city that the Astor House is to be lighted by Mr. Paine on the 4th of July, is false. We have on hand a brief description of a patent granted to a Frenchman for this same alledged discovery. We will notice it next week, and any other thing we may find of interest, relating to the subject.

Mantel pieces of marble may be effectually cleaned by rubbing them with a flannel dipped in a weak solution of carbonate of soda.

BEVAN'S PATENT ARCH GIRDER.



This, as we mentioned in our last number, is an invention of Mr. John Bevan, of New York, late Assistant Engineer on the Hudson River Railroad, and the patent is jointly owned by the inventor and Freeman Campbell, Esq., President of the Sectional Dock Co., N. Y. These engravings, figures 1, 2. and 3, represent the patent Arch Girder as designed for Bridges, and we can, with confidence, affirm that it combines, in a most perfect manner, the desideratum of strength, lightness, and thereby economy. The adaptation of this invention to the construction of bridges of every description, is evident to all. For cheapness it commends itself to every corporation in our land. Fig. 1 is an elevation of a bridge, 50 feet between supports, Fig. 2 is an enlarged profile on line 1 and 2. Fig 3 is an enlarged profile on line 3 and 4. Like letters refer to corresponding parts. A is a curved beam or girder, formed of two beams bolted together with blocks between, to keep open an interval or space, as shewn in figs. 2 and 3, A A, each beam is composed of leaves or plates of wood or metal of convenient length ; these are firmly secured to each other, the outer layer of plates, breaking joints with the inner layer, and may readily be continued to any required length. At the ends of the girder are fastened cramp iron pedestals, in which the pullies, C C, work. These pullies turn in the space left between the beams forming the girder ; on the top of the girder are the pullies, B B, working in pedestals, K K, shewn in fig. 2. A rope of wire, D D, is passed over the girder, resting on the pullies, B B, and is brought round the ends of the girder on pullies C C. The ends of the rope are secured to iron clamps, E, drawn together by a right and left screw. This completes the girder (according to the claims of the patent) as designed for bridges, and it will be readily perceived that the entire length of the rope, D D, is less than twice that of the girder, A, and consequently the girder cannot be straightened unless the rope is first broken. Weight placed on the girder would tend to straighten it ; this would be resisted by the tension of the wire rope, and the weight may be increased until either the wires are drawn asunder by pure tension, or the girder yields, by its fibres being crushed up. Now, the great strength of wood and iron in resisting tension and crushing are well known, and a just idea of the strength of Mr. Bevan's will then be obtained. For the girder, A, secured by the flexible binding, is only exposed to crushing, while its binding rope is to tension. Again, this strength is within itself, and there is neither thrust or strain on the abutments on which it may rest.

Having demonstrated the principles of the invention, we proceed to a description of the construction of the bridge, to prove lightness and economy. F F, figs. 1 and 3, are suspension rods of wood, having a plating of iron attached on two faces. The plating is continued beyond the wood of suspension rods, and at the upper end eyes are drilled for the axle of small pullies, to work in as shewn at N, fig. 3, to work in. At the lower end, the plating spreads out as shown at N, fig. 1, leaving shoulders on which the cross leaves G rest. The suspension rods hang by the pullies, N, on the wire rope, D, and the wood of the lower end ride on the chord rope, D, as shown in all the figures. The cross bearers, or joists, rest on the shoulders, H, of the plating of the suspension rods, and are bolted to the rods, one pair of bearers to each rod. In the interval between the cross bearers, bolster blocks, M M, are bolted, which help to retain the suspension rods at right angles to the cross bearers, and as the rods pass between the beams forming the girder, as shown at F, fig. 3, they stiffen the girder and resist any tendency to buckle. Over the cross bearers the ordinary flooring planks are laid, the side rails, L, fixed, and the bridge is then completed. It may rest on ornamental abutments, or be thrown from bank to bank of a river, with no other abutments than a few logs of timber ; the abutments, as we previously mentioned, not being required for increased strength. This bridge can be used for spans as wide as those crossed by suspension bridges, without the suspension piers or costly abutments. It ean be repaired or entirely renewed, without a stop being put to traffic, and we unhesitatingly affirm that its use must be almost universal, whether for crossing of small streams for farm use, or the expansive structures on any of our majestic rivers.

Some proper idea of its lightness may be formed from the dimensions of the girder, two of which, (one on either side of the roadway) support the entire structure. The girders in the drawing are each composed of two beams, measuring 1 foot 3 inches in depth, 4 inches in breadth, and 53 feet in length ; the entire beams supporting a roadway 50 feet in length and 17 feet breadth, containing only 1;060 feet of timber 1 inch thickness. The iron rope would be about 2 inches in diameter, and would cost not more than $15. The pullies might be of hardwood or metal. There can be no doubt about the principle of this invention, bridges will hereafter be constructed at a price merely nominal, in comparison with the expense of building a bridge of equal strength, by any of the systems now in use.

In our next number we will consider the invention as adapted for roofs of buildings and publish an explanatory engraving. The models, one of 40 feet may be seen by application to Freeman Campbell, Esq., of the firm of Campbell & Moody, No. 608 Washington st., and 7 Broad st., N. Y.

Steam Boiler Invention.

The Baltimore Sun states that a very valuable invention of an apparatus has been exhibited there as the invention of a Mr. Grimes, of Philadelphia and which is to prevent the explosion of Boilers. So far as we can get an idea of its construction and operation, it appears to be nothing new in principle athough there may be something new in its details of construction and arrangement. Its nature is thus described :

"It is an apparatus which can be placed in any part or room of a building, as, for instance, over the desk in the office of a manufactory, or other establishment where a steam engine is used in the yard, basement or other room, and which, by connection with the boiler, is a certain and unerring indicator both of the pressure of steam upon the boiler, and the exact height of the water within it ; thus affording not only to the engineer, but to all others engaged in any part of a building a safe guard at one and the same time, and by the same operation, against the two only sources of danger—over pressure of steam and lack of water.

Improvement in Sugar Refining.

According to a statement in the London Morning Herald we learn that an important improvement has taken place in the manufacture of Sugar. It says : "By means of the now well known patent for drying by centrifugal force, and the aid of a few simple adjuncts, sugar which took from 3 to 5 weeks to refine, is now done in as many minutes. Incredible as this may seem, the whole process and the result here stated has been witnessed by our information at the sugar houses of Messrs. Finzel and Son, at Bristol. Moreover, sugars altogether unsaleable in our markets were converted in few minutes into an article worth about $8 48."

[This is the process now described on our first page.

New method of Joining Metals.

Some interest has been excited by the experiments of a French gentleman, in London, who has, it is stated, discovered a method of joining, by some cement, pieces of metal together so firmly, that when exposed to a tensile strain, they will break through the metal rather than at the joint. Could such an invention be brought to bear practically, it would effect a complete revolution in works of metal.

Great Patent Case.

A most interesting Patent trial is now going on in the U. S. C. Court at Boston, the (plaintiffs) Patent of Morse on the one side and that of House (defendants) on the other. Both have patents for Electric Telegraph improvements. We shall notice this case again ere long.

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Scientific American

NEW YORK, JUNE 29, 1850.

Opinions about Discoveries.

By various articles which have recently appeared in a great number of our daily and weekly papers, commenting on the alledged discovery of Mr. Paine, we see much to condemn, both in spirit and in respect to what is more important, "truth." In one paper we see the opinions of Prof. Henry ridiculed as being those of a "silly theorist," and opportunity is taken to make a furious onslaught against all professors and philosophers as being that class which have universally stood in the way of scientific discovery. Mr. Paine, in a letter to the Worcester Tribune, comes to the same conclusion. He says—

"The histories of a Watts, a Fulton, a Whitney and a Morse, all stand as monuments of the bitter rancor of these mere men of books and theories, when their precincts are invaded by the bold hand of practical intelligence; their lore is the lore of a parrot, and their judgment very infallible in the matter of mummies, barring the mistakes of the sex."

We take the position that neither the rich nor the poor, as classes, nor professors, nor any one class whatever can be justly held up as opposers of scientific discovery. Men of influence, with strong prejudices and partiality, in church, state, association and society, have always influenced the opinions of those whom they led, whoever they may have been, to oppose any thing *they* opposed, be it right or wrong. Thus the church persecuted Gallileo, but it was not the rich of New York, who used to laugh at Fulton, but the working people. Mr. Paine is very unfortunate in his quotations—Watt was supported by the men of books, while his fellow mechanics persecuted him. It is a fact, that James Watt was so persecuted by the mechanics of Glasgow, that the only refuge he found was within the walls of the College. The professors erected a little shop for him within the gates, where he could pursue his labors unmolested, thus showing that the learned are often ready to foster genius. And who were Fulton's friends? The wealthy and scientific Livingston, of his native land, and the Earl of Stanhope abroad. And what man of books, with his *rancor*, opposed Whitney? Why, Whitney was a man of books himself, and so were Watt and Fulton; and in respect to Morse, we must say, that we never heard a scientific man display any rancor against his discovery, when it was first brought out, but we heard many an ignoramus sneer at it with wise looks. The wise *savans* of the Royal Society first laughed at Franklin's discovery of the identity of lightning with electricity, and the members of the House of Commons thought Stephenson was mad when he asserted that he would make a steam engine travel on land at the rate of ten miles per hour, but for all this, neither the learned nor the unlearned can be classified as the standard opposers of practical discoveries.

When an alledged discovery is brought before the public, its merits should be examined with all candor and courtesy. We were pleased to see the candid opinion of Prof. Henry published in the Tribune: it shows that men of science are not afraid of what they profess. We do not believe in the *wonders* of Paine's discovery—we have candidly and fairly given our reasons for our belief, and if any person can tell us wherein we are incorrect, we will thank him to do so. We have been perfectly astonished to see such a mass of ignorance displayed on the part of most of those who have written upon this subject. Some of them have written under a pressure of nonsense at the rate of two hundred pounds to the inch. Whenever Mr. Paine's discovery is revealed to the public, then we will know who is right and who *was* wrong; until that brilliant epoch arrives, we request our friends to keep cool and dark—all will soon be settled if *no accident* takes place.

An Englishman has astonished the people of Leipsic, by flying from one high tower to another.

Artificial Diamonds and the Washington Globe.

The Globe sometimes likes to splinter a lance with us; well, we like such an opponent, and for this reason, it employs logic and fair argument, a quality and qualification not very common. The Globe has taken us to task for believing—having faith that the diamond may be made artificially, and for propogating our belief. This is the gist of the question between us. The Globe has not the same faith as we have, and sets forth its reasons of unbelief. We, on the other hand, have given "a reason for the hope that is in us." On these two points we stand on an equal footing, and the question that arises from the positions we have both assumed, and the reasons adduced, is just this—which have thrown, or will throw, the most light on the subject? We are both in search of truth—that should be the end and aim of all such discussion. We have faith and reason on our side,—the Globe has no faith, but it has reason; and now let us see which has the "better reason."

In answer to our article on the subject, in No. 38, it attacks our argument proving that the Globe was wrong in making a comparison with gold and the diamond. Here is what it says in answer to that:—

"1st, It does not follow as a corrollary that because a diamond is carbon and reducible to gas, and gold a simple substance and not so reducible, that the first may be made artificially and the latter not. It would not be difficult to name a hundred thousand substances, the constituent parts of which are as well known as those of the diamond, to make which, the simplest, even without the assistance of nature, would be beyond the art of man, aided by all the resources and appliances of chemistry. What chemist, or artist, or wizard, can make a true emerald? (another precious stone;) and yet its component parts are as well known as those of the diamond.

2nd, But is it certain that gold is not reducible to gas, as the Scientific American assumes? We have doubts of that. With a powerful heat it has been perceptibly evaporated; and exposed to such a one as no doubt exists somewhere, and may be one day made manageable by human agency, it would be entirely volatilized—dissipated as effectually as the ghost in Hamlet was, soon after he "scented the morning air." And if the nebular hypothesis be true—it may or may not be—then gold, and everything else in creation, existed once in a gaseous state—diamonds included, of course," &c., &c. It here goes into some speculation about the Rochester Ghost speculations which we will not quote, as we have no doubt the Globe can surpass us in discussing such a subject. All that we will answer to head 2 is this, it contains no "fixed fact." Whenever gold is resolved into an elementary gas or gases, then we will have some faith that gold also may be made artificially. The man who has no reasonable flexibility of mind, will make but few scientific experiments. In respect to the emerald, what kind of argument is that against our position? It amounts to this—"A certain thing has not yet been done, consequently it never will." We presented incontrovertible arguments to this assumption, in our last, about the "lapis lazuli," and the Globe has not said a word in answer to it.—Now we will give it a little more of the same "*grape*." "The chemist," says Liebig, "did not remain satisfied with the separation of minerals into their component elements, but he sought by synthesis to form substances similar to those constructed by nature, to prove the accuracy of his processes and the correctness of his conclusions. Thus he formed, for instance, pumice stone, feld spar, mica, iron pyrites, &c., artificially, but of all the achievements of inorganic chemistry, the artificial formation of *lapis lazuli*, was the most brilliant and most conclusive." This beautiful azure blue stone, which remained unchanged by exposure to fire and air, was brought from Persia and China to Europe, as an article of trade, thirty years ago, and it is since that time it was made artificially. In 1830 the Globe would have said respecting it, "we do not believe it can be made artificially any more than gold." The production of mineral bodies by synthesis has ceased to be a scientific problem, but the field is still, in a great measure, an unexplored one. And to back up this, as late as the 29th April last, at a meeting of the Academy of Sciences, Paris, M. Daubre, an engineer of mines, read a paper and produced a number of artificial crystals which never had been found but in Nature's laboratory before. These were oxydes of titanium and quartz. The production of the oxyde of tin crystals, artificially, was considered a discovery of great note. In view of these facts, we want a good reason from those who oppose our views, why it may not be possible to make a diamond. But the Globe may look quite skeptically on the opinions of Liebig, as it does upon the alledged discovery of Despretz, but the state of chemical science at the present day, in comparison with what it was in the days of Priestly and Lavoisier, is unmistakable argument on our side of the question. Davy, Dalton, Berzelius and Rose were no such skeptics, as the Globe, in scientific discovery. We have no argument to offer against the difference of opinion entertained by Raspail and Orfila, about arsenic, as mentioned by the Globe, only we know the one in whom profound chemists have the most confidence.—Since all the arguments of the Globe go to prove the *impossibility* of making a diamond artificially, of course we cannot expect to bring it to think as we do, and we are afraid that the Globe will be perfectly incorrigible to all demonstration of the fact whatever, as the following extract will show:

"We repeat, with respect to M. Despretz's diamond, what we said a few days ago—that it has no pretension to be recognized as such, until its identity with that stone is established in the following particulars: specific gravity, hardness, lustre, refrangibility, crystallization, and electrical qualities. No resemblance merely, however close, will do, unless it be perfect identity, without an appreciable shade of difference. When all this is made to appear from actual and repeated experiments, by competent experimenters, then, and not before, it may begin to be supposed that a diamond has been manufactured by M. Despretz. At present, or as far as we are informed, there is no evidence of this, except the resemblance to a diamond, of the substance formed by volatilizing charcoal, when examined by a microscope; and we confess that we are a little surprised at the alacrity the Scientific American shows in admitting so startling an annunciation upon such insufficient proof, it being a case in which nothing should be believed, and nothing granted but in view of the most irrefragable attestations."

In the article which the Globe quotes, this is *our* language—"Artificial diamonds may never be made, but we certainly have as good and as sound a hope of their artificial manufacture as we have of many other things once deemed impossible, especially the *lapis lazuli*." Every man with truly philosophic views, will coincide with us, and not merely *begin to suppose* that a diamond was made by M. Despretz after a number has been made by others. It may be that after the Globe sees an artificial one, possessing all the qualities set forth in the above paragraph, (and different diamonds have different qualities, some of which we could name,) it will begin to suppose that something was overlooked, and say "this cannot be a true diamond," because Pliny says "the diamond destroys the effect of poisons and cures diseases, on which account it is called, by some, *anachitis*." Or, with De Boot, "the true diamond hath virtues, because of angelic spirits which it has pleased the Almighty to connect in a mysterious manner with certain natural substances." This latter view we must put upon the Globe, or it would not have hinted so mysteriously about the Rochester Spirits.

Lights and Shade of Sense and Nonsense.

What a *progressive age* this is! How eloquently the orator dilates on the superiority of this intelligent era! Bye and bye, if we are to credit some people, our little boys and girls running in kilts and pantalettes, will be able to rival Cicero in speaking, Plutarch and Pliny in writing; learn all their A, B, C's before they can *speak*, and march to school, "three year olds," to resolve the intricacies of conic sections, and floor Madison and Hamilton on the Constitution. Much as we believe in the superiority of the human mind, as that which belongs to the lord of creation, we have no faith whatever in its natural progress. Who among the present great men of the earth, is equal to Moses as a statesman, Demosthenes as an orator, Cæsar as a general, Homer as a poet, Plutarch as a biographer? Every new generation commences existence in perfect ignorance. The child torn from the bosom of its Christian mother, would be a barbarian if reared among savages. It is education which elevates one nation above another, and it is only the never-failing memory of the Press, which gives to one nation superior advantages for progress above another. In mental and moral philosophy, the world has not advanced an inch in two thousand years. In some of the arts, we are behind the past, while in others we have made great improvements. It is in physical discovery,—mechanics, chemistry, astronomy,—that we have made the greatest progress, and have truly surpassed the ancients, as far as the east is distant from the west. When we look abroad upon the field of physical discovery, we see a fair and lovely scene to contemplate; but it is not so when we look upon mental and moral philosophy. Crime is abundant, and as black now as it was a thousand years ago. It may, like the chamelion have changed its hue, but not its nature. Superstition has only assumed a different type from that of the days of old. There are thousands who now believe in the communion of spirits with the spirit-world. The revelations of A. J. Davis are believed to be true as gospel by thousands, and his Great Harmonia, wherein he describes his visions and communings of one spirit with another—his sights of souls leaving bodies, and such stuff—has its believers in thousands upon thousands. Grave doctors of divinity, go to the "peep and the mutter," and preach sense in the one sentence and nonsense in the next. If ever the world was afflicted with arrant humbugs in any age, it is the present. Owing to the mass of sense and nonsense propagated by those who *appear* like sane persons, we really believe that some great comet is approaching this sphere and affecting our atmosphere with inexpressible eccentricities, so as to affect the market in the rivalry of Barnums. Every day we behold some new flaming advertisement, about cures by magnetic induction and the like. It is very singular that our modern dealers with the spiritual world are in the majority of cases, of the same sex as the old lady of Endor. One famous fortune-teller in this city, has just had her life published. It is an extraordinary document. The singular revelations of Davis cannot hold a candle to the flaming revelations of our modern "cutty sarks." Give us the fair sex for finding out secrets. Mrs. Mettler, we see, hangs out her shingle at 68 Varick street, as the celebrated Psychological operator; and Madame Rockwell, the "Prophetess," is still to be seen at College place. An account of her life natural and spiritual, can be had for a moderate compensation. But above and beyond all these, along come the fair "Spiritual Knockers" from Rochester. These ladies, so favored by the spiritual world, have arrived in our city. After wonder-striking the west, they have journeyed along by easy stages, to astonish the South and East. Favored mortals! what kind spirits they have to attend them. Faithfully have they surrounded their footsteps and sweetly beset them from the Genesee to the Atlantic, astonishing the Mohawks and the Albanians on the way, and now perplexing, enlightening, amusing and dumfounding the doctors, lawyers, editors and authors of this great and wise city—our modern Gotham. If you want to converse with a departed friend, down with your dollar, and enter the room of the sibyls. Knock, knock. The spirits will converse. Is your friend a female? Knock, (yes.) Dead? No knock, (no.) Where is she now? Name over a number of places. Utica—no knock. Boston—knock, (yes.) Correct. Astonishing! And then Bauldy departs with his nose bleeding. Such are some evidences of the progress of the human mind in the nineteenth century.

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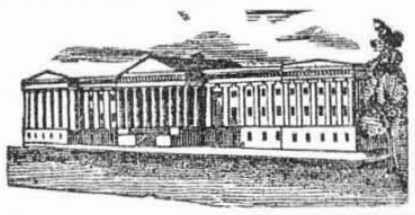

☞ Our weekly List of Patents and Designs contains every new Patent, Re-issue and Design emanating from the Department, and is prepared officially, expressly for the Scientific American, and for no other paper in the city, consequently other journals are obliged to wait the issue of the "Sci. Am." in order to profit by the expense to which we are subject, and of course must be one week behind. Those publishers who copy from this department in our columns, will, in justice to us, give proper credit for the same.

LIST OF PATENT CLAIMS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending June 18, 1850.

To E. Bookhout & H. Cochen, Jr., of Williamsburg, N. Y., for improvement in machines for finishing morocco.

What we claim is, first, a sliding head with finishing tools, one or more attached, said tools to be held down by weight or springs; said sliding head to do its work while in a backward and forward motion, and running on straight ways, as herein set forth.

Second, we claim as our invention the application of one or more clasps, for the purposes described, in combination with one or more finishing tools, whose motions are parallel with said clasps.

We also claim the application of one or more finishing tools which are held stationary while rubbing the skin or paper and allowed to revolve a little when required to equalize the wear on the peripheries of the same.

To Z. Breed, of Weare, N. H., for improvement in spring-teeth of hay rakes.

I claim the construction of the spring teeth of the hay rake of a double wire, in place of the single one generally used, as described in the specification.

To J. M. Brown, of Bloomfield, Ohio, for improvement in attaching neck-yokes to poles of carriages.

I do not claim the universal joint merely of itself, but I claim as my invention the mode herein described of constructing the neck yoke, either solid or divided, and fitting the tongue or pole of the carriage, and these so constructed and fitted, in combination with the movable band on which are projections or knobs, by which means the whole are securely connected, and thus form a universal joint for the purpose stated, and not otherwise.

To G. Chilson, of Boston, Mass., for improvement in Parlor Stoves.

I claim the arrangement of the flues, in combination with the fire chamber, substantially in the manner and for the purposes set forth.

To E. H. Collier, of Scituate, Mass., for improved method of making nails by rolling.

I claim the auxiliary furnace, in combination with the machinery for rolling nails, &c., as above described for retaining the heat of the plates or rods of iron, while they are separately passed into the machine.

To R. Eastman, of Concord, N. H., for improvement in machines for dressing stone.

I claim dressing stone by means of chilled cast iron burrs, substantially as herein set forth.

To B. Fowler, of Lubec, Me., for improvement in furnaces for calcining gypsum.

I am aware that apparatus for various other purposes, has been divided into several chambers with various arrangements, and that beams and slides of various forms have been used, and that tubes have been used for conducting and encouraging heat, I therefore do not claim either of these as such, as my invention, but what I claim as my invention is the combination of the pan, or boiler, with the three chambers, when they are combined with the beams, slides and dampers, when the whole is constructed, arranged, and combined, so as to operate substantially according to the method, and to effect the purpose, substantially as herein described.

To A. M. George, of Nashua, N. H., for improved Spike machine.

I claim, first, the rising and falling guide and cutter frame, in combination with a moving series of dies whereby the spike rod is guided into the moving dies and a slip of proper length cut off to form the spike, the knives being operated by levers which force them towards each other whenever the movement of the frame brings the levers in contact with stationary arms projected from the main frame.

Second, the forked and hinged clamp, constructed substantially as herein set forth, in such manner that when open its inner fork forms the office of a guage, to regulate the length of the spike, and when closed its outer fork gripes the shoulder of the spike during the heading, and its inner fork is withdrawn to allow the formation of the point.

Third, the combination of the arm, with the clamp, and its tongue by means of which the heading, griping and pointing of the spike are effected substantially as herein described at one operation.

To L. Gilbert, of Boston, Mass., for improvement in upright pianofortes.

I claim, first, combining with each of the standards of the frame—a sustaining and strengthening rod, arranged in a curved groove in the back of said standards, and operating substantially as herein above described.

Second, I claim connecting the stem to the rocker bar, fastened to the key lever, as described, and also the horizontal arm on which the jack, &c., is supported, by which the whole action becomes attached to the key lever, and the hammer is made to return when the end of the key lever descends, all as herein above set forth.

I also claim combining the catch with the fly of the jack, as above set forth, and in combination with a jack and back catch, so arranged, the curved arm projecting from the hammer stem, and having a regulating button connected to said arm, as above set forth.

Lastly, I claim regulating the throwing off the hammer from the strings by the projection from the centre block of the hammer and below its centre of action, in combination with a regulating button passing through the fly of the jack.

To B. K. Maltby, of Cleveland, Ohio, (Assignor to Ira M. Mead, of Mogadore, Ohio, for improvement in apparatus for raising the grate in cooking-stoves.

I claim the apparatus for lowering and raising the grate, so constructed as to act without liability to obstruction from the baking of ashes between the parts of machinery, having sliding pieces or racks furnished with perforations instead of cogs, in combination with pinions acting upon them by cogs, said pinions having the spaces between the cogs beveled, bringing them to a kind of edge, thus admitting no flat spaces to intervene where ashes may accumulate to prevent the working of the machinery.

To W. W. Marston, of New York, N. Y., for devices for moving and holding a piston breech-pin.

The several parts used herein, being all well known, I do not intend to claim any one of them herein as my invention, but I do claim as new and of my own invention, the arrangement of the parts described and shown, in which arrangement the radius bar is connected to the rear end of the sliding breech-pin, by a tenon and slot, taking a pin on the jaws, at the rear end of the breech-pin, for the purposes of holding the breech-pin in place while the charge is exploded, removing the breech-pin to receive successive charges. and forcing the charge into the barrel by replacing the breech-pin for the next successive discharges, the whole constructed, arranged and acting substantially as described.

To N. Post, of East Cleveland, Ohio, for improvement in Safety-stirrups.

I claim the safety bar, and the spring arranged in the form set forth, or in any other form, substantially the same in principle.

Second, the arrangement of the loop cap, by which I place the stirrup bars at right angles with the stirrup strap.

Third, the flat bar rising from the top of the loop, to prevent the rolling of the stirrup in the strap.

To J. Sherlock & Wm. Brackbill, of Portugal, Pa. for improvement in feed apparatus for mills.

We claim the feeding apparatus, as described, for keeping a regular supply constantly fed to the grinding surfaces.

To A. Smith, of West Farms, N. Y., for improvements in apparatus for parti-coloring yarn.

I claim the method substantially as herein described, of parti-coloring yarns by winding them on reels arranged in frames so constructed as to admit of immersing in dyeing liquor such portions of the yarns as are desired to be dyed and shifting the same for dying other parts in like manner, substantially as described.

And I also claim connecting one or both of the reels in each frame by means of slides, to admit of removing the reel from contact with the yarns, whilst in the process of dyeing, substantially as specified.

To J. R. Stafford, of Cleveland, Ohio, for improvement in mills for grinding.

I claim the combination of crushing rollers with a disintegrating apparatus, arranged and operating substantially in the manner and for the purpose as herein set forth.

To J. F. Wood, of Homer, La, for combination of a guide tooth with an inclined scraper.

I claim the guiding tooth or revolving cutter combined with the inclined scraper, substantially as above stated, for regulating the course of the machine.

DESIGNS.

To E. P. Penniman, of Rochester, N. Y., for design for stoves.

To J. F. Rathbone, of Albany, N. Y., for two designs for stoves.

To J. Wager, David Pratt & V. Richmond, of Troy, N. Y., for design for stoves.

Manufactures in the United States.

A recent number of the London Globe contains a splendid article on the present depressed state of "American Manufactures," which is corroborative of all the ideas we have thrown out upon this subject, the root of which is "the imperative necessity of northern manufacturers making finer goods if they would hope for success." The present state of northern manufactures is attributed justly to the high price of cotton. It says, "it is only in the production of that description of goods into the market value of which the cost of labor, of skill and of capital, enter most sparingly—in other words, of such fabrics as may be classed nearest to the raw material—that the American manufacturers can compete with us. These, when required for a voyage to China, as well as when wanted for consumption in the States, may be had there about as cheaply as they can be brought from England.

But this advantage, resting wholly on the price of the raw material, is, of course very seriously affected by a failure of the cotton crop. Such a failure is of comparatively small importance to manufacturers who are increasing ten-fold the value of every pound of cotton they take in hand. To double the price of the raw material is, to them, only to increase the cost of the finished fabric by one-tenth and the check to consumption, and to demand, coming of the rise in price, they feel in proportion. To the manufacturer who is turning out the cotton only three times as valuable as when he receives it, the effect is to make a rise of the selling price, in the proportion of four to three, absolutely necessary to prevent loss.—And it is hardly necessary to say that a rise of 33 per cent on coarse goods is likely to check their sale much more than a rise of ten per cent. would check that of goods of a finer description. Similarly, the maker of fine cutlery cares little for a rise of 50 per cent. in the price of iron; but it may stop the business of the maker of heavy goods, and even ruin contractors for large works in cast iron.

The precarious position of the New England manufacturers is further illustrated by the recent growth of rival factories in the Southern States. It is said that there are now nearly a hundred cotton mills at work in the four States of Georgia, Tennessee, South Carolina, and Alabama; and the number is increasing. We can very well believe it. It is not improbable—seeing that the only natural advantage possessed by the New England manufacturers are almost equally within the reach of their Southern rivals, that two-thirds of the manufacturing of cotton capable of being carried on within the Union, at a profit, will within a few years be carried on in the Southern States.—The latter have cheap labor, for they have slaves. On the other hand, slave labor has never yet been extensively, or systematically, combined with any appreciable degree of mechanical skill. If the Southern planters contrive to carry on with it any but the rudest and most simple process, they will develope an entirely new phase in the history of slave labor. Yet within its limited range we do not doubt that they may make up, more cheaply than it has yet been done in the New England States, the greater part of the heavy fabrics hitherto made there at a profit.

To us, in Old England, however, we firmly believe that the issue of this contest, or of anything the American people may do to contravene the natural course of trade by protective duties, is of very little consequence. It is only with regard to the operation; and only as to a small proportion of these; such, namely, as to which the natural advantages we possess (with regard to capital, skill, and labor, balanced against their advantage upon the raw material and cost of carriage) are the smallest—With the most highly mainpulated goods they have no chance of sucess, and were they to increase their protective duties five-fold—if only because the cost of evading duties levied on frontiers like those of America, must always be low, especially for goods of small bulk and weight, not easily damaged in transit.

That the Americans can make some cotton goods cheaper than we can is clear—for they meet us with some in foreign markets. But is their advantage in the fabrication of the coarsest and heaviest kinds of cotton goods, founded as it is upon a fair natural advantage, to be regretted? We think not. Quite the contrary."

[On another column of our paper will be found a *huge* list of cotton factories now in the South. These can and do make coarse goods cheaper than our northern factories, consequently they will overthrow the coarse goods manufactures of the North. Believing this to be true, we dissent from the views of the London Globe in respect to the manufacture of finer goods. The success of a few factories which we might name, in the manufacture of finer goods than the general run of such fabrics, is a sure evidence to us of still greater success in the manufacture of much finer goods. The monopoly of the best raw material for this purpose, is as necessary as the extra labor and finer machinery required to produce qualities of goods, to compete successfully with Manchester and Glasgow.

A New Form of Mesmerism in Clocks.

It is said that certain clock makers at Bristol, Connecticut, in making some chronometers lately, found it impossible for the workmen to keep awake when they were setting the instruments agoing. It is necessary, in regulating them, to count the beats in a minute by a regulator, change the hair-spring until both go nearly in time; then the screws in the balance are turned until the greatest maxium is obtained, when they are rated and the rate registered. The workmen find no difficulty with the parts, but when the whole movement is going, any person who sits down and counts the beats, or watches the motion of the balance, invariably becomes drowsy. Attempts have been made with other clocks, but they do not produce the same sensation. The clocks are of polished work, and gilded by a peculiar galvanic process, which, if the facts be as here stated, may have something to do with the effect. What is curious is, that the person who is put to sleep continues to count the beatings of the time with his hand or foot.—[Ex.

Strength of the Sword Fish.

Another illustration, says the New Bedford Mercury, of the well known power and agility of the sword fish, the formidable enemy of the whale, was discovered by the workmen engaged in reparing the brig Leonidas, whaler, at this port, a day or two since. In searching for the cause of a leak which had occured during her last voyage, it was found that the side of the vessel had been penetrated quite through, including the copper sheathing and two thicknesses of solid oak plank, not less than five inches, by the sword of one of these fish. The sword was about twelve inches in length, and had produced a seam by splitting the plank at its entrance. It was broken off smoothly at the side af the vessel.

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TO CORRESPONDENTS.

"J. H., of Geo."—For one run of 4½ stones for wheat, 14 horse power; 5 horse power for one upright saw. With regard to the price, &c., of the engine, machinery, &c., if you address a letter (*p. p.*), to Mr. Leonard, Agent of the Matteawan Machine Shop, this city, you will get all the information minutely.

"Y., of Amesbury."—If you send your name we will publish your letter.

"S. C. A., of Miss."—We do not see any part of your Horse Power Wheel on which we could base a claim for a patent. We have no doubt but it will work well, but we do not see anything in it, as described, particularly new.

"J. O. A., of Ill."—The pasteboard will not answer at all like the lithograph stone;—you can easily try the experiment. We cannot see how the other plan for climbing houses will work at all. Yet we would like you to try some experiments, for if it would work it would be invaluable.

"S. V. R. A., of Wis."—We like your ideas well about the life-boat steamer; we believe them to be practicable and patentable. There is just one difficulty in the way. Such improvements are not easily introduced, and the question with you should be, "will it pay to prosecute it?"

"N. W. W., of Phila."—You are at liberty to consult with us in regard to novelty of an invention.

"J. L., of N. Y."—You had better forward your model by Express, upon its receipt we will advise you in reference to the point in question, as far as possible. You will see that we cannot do so without it.

"H. N. H., of N. Y."—We shall attend to your business as soon as possible. $6 received.

"M. M. F., of Pa., J. H., of Ala., C. A. D."—Shall write you soon. The models have arrived.

"M. S., of Ohio."—The price of Ewbank's Hydraulics and Mechanics you will see is advertised at $2,50. Please to inform us how we shall send it, it being a bound volume we cannot forward it through the mail with cutting the ocver off.

"E. H.. & S. E. P., of Pa."—The price would probably be $8. The Letters Patent could be sent to us by Express and returned by the same medium.

"H. P. B., of Ind."—Your model had not reached us when our paper went to press.—We are looking for it daily.

"B. O. C. of Geo."—No such proposition as you make, can have any infiuence in the matter. It is best to use prudence and wait for further developements.

"B. H. W., and J. L. D., of Ga."—To the former we shipped a Camera Lucida and to the latter a small box containing an engraved plate, both by Steamer "Southerner," June 21st.

"J. R., of O."—Your new model is received and will answer the requirements of the Patent Office much better than your former one.—The case will come up with us for execution in a few days.

"J. H. R., of N. Y."—Your specification with $5 was received Monday morning, and the papers have all been forwarded to the Patent Office—cannot inform you how long it will be before your case will be up for examination.

"J.B.W., of N.J."—There is not better work upon the subject than the one you have. It has received but little attention corresponding with its importance. By dampening the wrappers they can be removed without injury to the papers.

"J. S., of Ind."—Your letter of the 17th reached us safe. We can only say in reply to it, that your papers, models, and fees are safely lodged in the Patent Office, and will come up for examination in their order, of the result we shall duly advise you. They must await their turn; you may reasonably expect to hear soon.

"R. C. I., of R. I."—Your order was filled so far as we were able to do so. The particulars we gave in a letter under date of the 24th. Books sent by Express. We thank you, for your continued confidence.

"H. A. F., of Mass."—Several patents have been granted for self-feeding or fountain pens. We cannot decide whether yours is new or not untill you send a model.

"A. R. C., of R. I."—Certainly; and we shall be happy to reciprocate to the fullest extent. You labored under a mistake in the first statement as you are probably aware by this time.

"H. S., of N. Y."—To make friction matches, the chlorate of potash is used as the percussion powder, the phosphorus to readily ignite, and the sulphur to burn for some time. The glue is just to mix and make the materials stick to the wood. The chlorate of potash, the sulphuret of antimony and a little glue will make good stuff for matches. Use 1 part of the chlorate of potash 1 of phosphorus 2 of sulphur and a very little glue, melt and dip, get good materials and use a little vermillion to color the stuff.

"A. R., of Go"—The Parker's patent is not extended yet and may not be. He can get it extended if Congress does so. The Hotchkiss wheel is allowed to be an infringement, and all others with spiral scrolls.

Money received on account of Patent Office business, since June 19th, 1850:—

G. W. T., of Mass., $30; J. D. J., of Ct., $10; L. S. L., of Me., $32; A. W. D., of Me., $15, and R. D. S., of N. Y., $20.

Erratum.

A number of papers were worked off last week with an error in the first editorial column: the word "corruption," on the 27th line, should have read "*bribery*."

New Agents for the Scientific American.

Our South Carolina friends are hereby informed that we have completed an arrangement with the publishers of the "Southern Literary Gazette," to receive subscriptions for the Scientific American. Money paid to the Editor, Mr. Richards, at Charleston, for subscriptions will be duly acknowledged and the paper forwarded as he may direct.

Back Volumes Scientific American.

We are obliged to inform our patrons that complete sets of all the past Volumes are entirely exhausted. We have a few incomplete sets of Vols. 2 and 3, comprising about 50 Nos. of both Vols., which may be had by remitting one dollar, and we have sets of above 40 Nos. each of Vols. 3 and 4 which will be forwarded by mail an the receipt of one dollar for each set. Those desiring to secure Vol. 5 but have delayed subscribing at first, are advised to remit $2 without delay or they may be disappointed in getting a volume at all, should they wait until the Nos. are all published?

ADVERTISEMENTS.

Terms of Advertizing.

One square of 8 lines, 50 cents for each insertion.
" 12 lines, 75 cts., " "
" 16 lines, $1,00 " "

Advertisements should not exceed 16 lines, and cuts cannot be inserted in connection with them for any price.

Patent Office.

128 FULTON ST.

NOTICE TO INVENTORS.—Inventors and others requiring protection by United States Letters Patent, are informed that all business relating to the procuration of letters patent, or filing caveats, is transacted at the Scientific American Office, with the utmost economy and despatch. Drawings of all kinds executed on the most reasonable terms. Messrs. Munn & Co. can be consulted at all times in regard to Patent business, at their office, and such advice rendered as will enable inventors to adopt the safest means for securing their rights.

Arrangements have been made with Messrs. Barlow and Payne, Patent Attornies, in London, for procuring Letters Patent in Great Britain and France, with great facility and dispatch.

MUNN & CO.,
128 Fultonstreet, New York.

DISSOLVING VIEWS. OXY-HYDROgen Microscope, and Polariscope, for sale. A splendid apparatus. in complete order for Exhibition, with 37 fine paintings of Views in Europe and the Holy Land, with descriptions; six Chromatrope, one hundred Microscope objects; selenite designs and sections of crystals for illustrating the properties of polarized light; to which will be added a powerful Drummond Light, if required—gas bags screens, &c., together with an improved apparatus for generating the gases with great rapidity and perfect safety. Full instructions will be given respecting the generation of the gases and management of the instruments, by D. HISCOX, 31 Jay st., N. Y. 1*

BURR MILL STONES.—We have made arrangements which will enable us to supply all kinds of French Burr, Holland and Esopus Mill Stones of the best material and manufacture, at the lowest prices. Burr Mill Stones made to order and warranted to be of the best quality; Burr Blocks for sale.—Orders addressed to MUNN & CO., post-paid, at this Office, will meet with prompt attention.

CLOCKS FOR CHURCHES, PUBLIC Buildings, Railroad Stations, &c.—The subscriber having made important improvements in the construction of Clocks, especially in the apparatus for counteracting the influence of the changes of temperature upon the pendulum, and in the retaining power, (which keeps the clock going while being wound up,) together with a most precise method of adjusting the pendulum to correct time, are prepared to furnish time-keepers of a very superior quality, both for accuracy of time-keeping and durability. They speak with confidence, from having tested their performance for several years. The terms of payment will be so arranged as to afford purchasers ample opportunity to test their qualities. Address SHERRY & BYRAM, Oakland Works, Sag Harbor, Long Island.
40 3meow*

JOHN H. LESTER.—Manufacturer of Woodworth's Planing Machines, Steam Engines, and Boilers, Sugar Mills, Slide Lathes, Iron Planing Machines, Iron and Brass Castings of every descriptions. Planing Machines of all sizes and with all the latest improvements constantly on hand or made to order at the shortest notice, with Steam Engines, Boilers, Shafting, and every kind of machinery necessary to fit up planing, sugar or saw mills. Orders by mail or otherwise will receive prompt attention. Office 192 Fulton st., N. Y. Factory and Foundry at Hastings upon the Hudson, 20 miles from the city by H. R Railroad.
404*

TO MACHINISTS.—A superior iron power Planing Machines for sale, by Faulkner & Lewis, S. W. cor. of Hamilton and Nixon sts., near Fairmount, Phila.,—will plain 6 feet by 27 inches wide and 24 inches high, weighing 23 cwt., will plane nearly 3,000 sq. in. in 10 hours; it is finished in a superior style and built on the most approved principle. Will be sold cheap. For particulars please call or address as above. Also steam engines and lathes built to order. 404*

THE THIRD ANNUAL EXHIBITION of the Maryland Institute for the promotion of the Mechanic Arts, will be opened at Washington Hall, Baltimore, on Monday the 14th Oct., 1850. The Committee of Arrangements earnestly invite the mechanics and manufacturers throughout the States to exhibit speciments of their handiwork and become competitors for the prizes offered as premiums for superior merit, either in design or execution:—15 gold and 60 silver medals are offered to male and 40 to female contributors. Competent judges will be carefully selected, and increased facilities afforded to all those desiring to present articles for premium or exhibition. For further information, address the Chairman of Com. on Exhibition, Baltimore.
37 5 C. W. BENTLEY, Chairman.

ALCOTT'S CONCENTRIC LATHES.—We have on hand a few of these celebrated Lathes, which the inventor informs us will execute superior work at the following rates:—

Windsor Chair Legs and Pillars, 1000 per 11 hours. Rods and Rounds, 2000; Hoe Handles, 800; Fork Handles, 500; Broom Handles, 150 per 11 hours.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch, and work as smoothly as on a straight line, and does excellent work. Sold without frames for the low price of $25—boxed and shipped, with directions for setting up. Address, (post paid). MUNN & CO.,
14tf At this Office

WOOD'S PATENT SHINGLE MACHINES.—These excellent machines, illustrated and described in No. 23, Vol. 5, Scientific American, are offered for sale in Town, County and State Rights, or by single machines. There are three sizes, the first cuts an 18 inch shingle, price, $100; 2nd cuts 24 inch, price $110; 3rd, 28 inch, $120. Orders addressed to J. D. Johnson, Easton, Conn., or to Munn & Co., "Sci. Am." Office, will meet prompt attention. 36 tf

MACHINERY.—S. C. HILLS, No. 12 Platt Street, N. Y., dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills Kase's, Von Schmidt's, and other Pumps, Johnson's Shingle machines, Woodworth's, Daniel's and Law's Planing machines, Dick's Presses, Punches, and Shears; Morticing and Tennoning Machines, Belting, machinery oil; Beal's patent Cob and Corn Mills; Burr Mill, and Grindstones, Lead and Iron Pipe, &c Letters to be noticed must be post paid. 33tf

MECHANICS' FAIR AT BOSTON.—(To be held September, 1850.)—The New England Patent Agency, Haskins building, Boston, will receive patented machinery, or other articles, place the same in the above Fair, and take orders for them, or dispose of the Right, for a reasonable commission. They will also, if desired, exhibit them before or after the Fair, at their own spacious rooms. Storage free, and no expense charged except freight and cartage. Inventors should lose no time in forwarding their articles. DARIUS WELLINGTON, Agent
39 8 New England Patent Agency.

WOODWORTH'S PATENT PLANING Machine 1850 to '56.—Recent decisions having finally established all the claims of this patent, the subscriber is prepared to dispose of the right to use the machine in the unoccupied Counties and Towns in the State of New York and in Northern Pensylvania. These machinese as made by the subscriber at one operation reduce to a thickness, plane tongue, groove, head and rabbet all kinds of lumber in a better manner and four times as expeditiously and cheaply as such work can be done by hand or by any other machine For exclusive or single rights, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 37 6eow*

TO LUMBERMEN.—The subscribers have obtained a patent for an improved mode of hanging Mill Saws, in which the saw is self-adjusting and self-straining, and is as easily kept in order as any other mill. We dispense with the old frame or gate entirely, thereby saving one-third of the power and three-fourths of the wear and tear incident to the old fashioned mills. These machines will be kept constantly on hand for sale. Letters post-paid may be addressed to us concerning this improvement or for territory, at Wilkes Barre, Pa.
41 4* E. H. & S. E. PARSONS.

COTTON MACHINERY FOR SALE.—All the machinery belonging to a cotton factory now in operation, consisting of pickers, cards, mules, drawing frames, looms, &c. &c., all in good running order, and for sale cheap. Apply to ANDREWS & JESUP, No. 70 Pine st., N. Y. 41 3

CHAIN PUMPS.—A superior article of galvanized chain, with fusible metal elevators, and all the parts complete, or any part thereof, sold wholesale and retail at the lowest cash prices, by AARON KILBORN, No. 4 Harvard st., New Haven, Ct. 1

WANTED TO PURCHASE—A Second-hand Steam Engine, with or without boiler, of about 12 horse power. BLISS, POTTER & CO.,
1* Pawtucket, R. I.

SAW MILL MACHINERY.—The subscriber would respectfully inform his friends, and the public generally, that he still continues to manufacture, and keeps constantly on hand all kinds of saw mill machinery, consisting of log saw mill fitted up in the best manner and most approved mechanical mode, patent improved slitting and panel saw mills, (patented by himself and proved superior to any other in use) also for veneering, scroll and circular saws. Shafting and other machinery fitted to order. Persons in want of such machinery will promote their interests by an interview with the undersigned, before engaging elsewhere. articles embraced above, as his long experience both in the manufacture and use thereof, has given him a thorough practical acquaintance with the best models of constructing.

THOMAS J. WELLS,
38 4* Foot of 29th St., N. R., New York.

NEW STYLE AND IMPROVED SLIDE LATHE.—SCRANTON & PARSHLY, New Haven, Conn., will sell the best slide Lathe for $150 to $200 less than ever before sold. They are built in the most substantial manner—the heads geared and arbors large and of the best cast steel; the slide rest is held to the bed by guides, fed by a screw 2 in. diameter, and feeds from 80 to the in. to 5 1-2in.. pitch, working several hundred different pitch threads within these extremes. Besides the regular lathe feed it has the facing up feed. It is admirably adapted for holding and boring boxes, cylinders and turning and cutting screws. One extra large size face plate, centre rest and reversing pullies go with each lathe. The12 ft. lathe weighs 4000 lbs. turning 8 ft. 5 in., price $450. The 15 ft. 7 in lathes 4500 lbs., turning 12 feet, $500, swings 26 in. For further particulars address as above, (p. p.) Other lathes for sale as heretofore. 34tf

MACHINE BANDS, RUBBER HOSE, &c.—After 20 years devoted to the manafacture of India Rubber, the undersigned feels confident of his thorough practical knowledge of the quality of goods in his line. The three factories now owned and operated by him, turn out large quantities of all kinds and styles of rubber goods in use, mostly vulcanized rubber. Orders for railroads, factories and merchants executed with intelligent regard to wants and best interest of the customer. Warehouse 23 Courtland st., N. Y.; 1 factory at Great Barrington, Mass., with whole flow of Housatonic river for power; 1 at New Brunswick, N. J., by steam power; 1 at Piscataway, N. J., waterpower. These 3 factories embrace machinery and apparatus costing over $50,000—enabling the owner to execute orders with more promptness than any other establishment in the United States.
33 10* HORACE H. DAY.

TO PAINTERS AND OTHERS.—American Anatomic Drier, Electro Chemical graining colors, Electro Negative gold size, and Chemical Oil Stove Polish. The Drier, improves in quality, by age—is adapted to all kinds of paints, and also to Printers' inks and colors. The above articles are compounded upon known chemical laws, and are submitted to the public without further comment. Manufactured and sold wholesale and retail at 114 John st., New York, and Flushing, L. I., N. Y., by

QUARTERMA & SON,
36 3m Painters and Chemists

COTTON, WOOLEN AND SILK MANU-FACTURERS' DEPOT.—ANDREWS & JESUP, No. 70 Pine st., N. Y., dealers in articles for the use of Cotton, Woolen and silk manufacturers, and agents for the sale of shearing, carding, burring, napping, wool-picking, flock-cutting and waste machines, regulators, satinet and jean warps, &c. Weavers' reeds and heddles, bobbins and spools, of every description, made to order. Sperm, lard and olive oils and oil soap. 40tf

MATTEAWAN MACHINE WORKS.—Locomotive Engines, of every size and pattern. Also tenders. wheels, axles, and other railroad machinery. Stationary engines, boilers, &c. Arranged for driving cotton,, woolen and other mill. Cotton and woolen machinery of every description, embodying all the modern improvements. Mill geering, from probably the most extensive assortment of patterns in this line, in any section of the country. Tools, turning lathes, slabbing, plaining, cutting and drilling machines. Together with all other tools required in machine shops. Apply at the Matteawan Co. Work, Fishkill Landing, N. Y., or at No. 66 Beaver st. New York City, to
40tf WILLIAM B. LEONARD, Agent.

IMPORTANT INVENTION.—GURLEY'S beautiful and unique machine for gumming saws, noticed in No. 50, Vol. 4, Scientific American, is now offered to the public as a most important desideratum for saw manufacturers and all who use saws, as they can gum the teeth with very little trouble.—Orders addressed to G. A. KIRTLAND, No. 205 South street, (p. p.), will meet prompt attention. 36 tf

FOREIGN PATENTS.—PATENTS procured in GREAT BRITAIN and her colonies, also France, Belgium, Holland, &c., &c., with certainty and dispatch through special and responsible agents appointed, by, and connected only with this establishment.—Pamphlets containing a synopsis of Foreign Patent laws, and information can be had gratis on application
JOSEPH P. PIRSSON, Civil Engineer,
33tf Office 5 Wall street, New York.

JONATHAN TAYLOR, Machinist, Montgomery, Alabama, begs leave to inform inventors and the public in general, that he is prepared to make patterns and models to order. He is also desirous of being appointed agent for the disposal of all kinds of patent machinery. Office on Commerce street, two doors from the Exchange Hotel. All letters must be post-paid. 32 10*

SASH AND BLIND MACHINE—Patented by Jesse Leavens, of Springfield, Mass., is the best Sash and Blind Machine now in use. The Machine cost $300 at the shop where they are made, near Springfield—extra charge for the right of using. The machine does all to a Window Sash and Blind except putting them together. Orders from abroad will be promptly attended to, by addressing JESSE LEAVENS, Palmer Depot, Mass. 22 20t*

IRON FOUNDERS FACING DUST.—An approved article of Sea Coal Dust to mix with moulding sand; also superior Charcoal Foundry Blacking, Lehigh Blacking, Soapstone and Black Lead Dust, Fire Clay, &c.,—for sale by G. O. ROBERTSON,—City office 4 Liberty Place, (formerly Little Green street), near the Post Office, N. Y. 37 4eow*

TO THE THINKERS OF NEW YORK. KNOX is desirous that every rational man in want of a hat, should, for a moment, think before deciding where they shall supply that want. KNOX thinks that 128 Fulton st, is just the spot. 38 8*

ONE HORSE STEAM ENGINE—Attached to Bentley's Patent Boiler, with pump, &c., all complete, for sale; it is set up without brickwork and occupies only three feet of floor room,—price $200. Apply, post-paid, to S. C. HILLS, machinery agent, 12 Platt st. 384

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Scientific Museum.

Asphyxia.

As this is the season when sudden deaths from drowning &c., are very common. We publish the following modes of treatment which will be found to be invaluable :—

Cautions.—1. Lose no time. 2. Avoid all rough usage. 3. Never hold the body up by the feet. 4. Nor roll the body on casks. 5. Nor rub the body with salt or spirits. 6. Nor inject tobacco-smoke or infusion of tobacco.

Restorative Means.—If apparently drowned send quickly for medical assistance; but do not delay the following means; 1. Convey the body carefully, with the head and shoulders supported in a raised position to the nearest house. I1. Strip the body, and rub it dry; then wrap it in hot blankets, and place it in a warm bed in a chamber. III. Wipe and cleanse the mouth and nostrils. IV. In order to restore the natural warmth of body—

I. Move a heated covered warming-pan over the back and spine. 2. Put bladders or bottles of hot water, or heated bricks to the pit of the stomach, the arm pits, between the thighs, and to the soles of the feet. 3. Foment the body with hot flannels: but, if possible. 4. Immerse the body in a warm bath, as hot as the hand can bear without pain, and this is preferable to the other means for restoring warmth. 5. Rub the body briskly with the hand; do not, however, suspend the use of the other means at the same time.

V. In order to restore breathing introduce the pipe of a common bellows (when the apparatus of a doctor is not at hand) into one nostril, carefully closing the other and the mouth; at the same time drawing downwards and pushing gently backwards, the upper part of the windpipe, to allow a more free admission of air; blow the bellows gently, in order to inflate the lungs, till the breast be a little raised; the mouth and nostrils should then be set free, and a moderate pressure made with the hand upon the chest. Repeat this process till life appears. VI. Electricity to be employed early by a medical assistant. VII. Inject into the stomach, by means of an elastic tube and syringe, half a pint of warm brandy and water, or wine and water. VIII. Apply sal volatile or hartshorn to the nostrils.

If Apparently Dead from Intense Cold.—Rub the body with snow, ice, or cold water. Restore warmth by slow degrees; and, after some time if necessary, employ the means recommended for the drowned. In these accidents it is highly dangerous to apply heat too early.

If Apparently Dead from Noxious Vapors, &c.—1. Remove the body into a cool fresh air. 2. Dash cold water on the neck, face, and breast frequently. 3. If the body be cold, apply warmth, as recommended for the drowned. 4. Use the means reccommended for inflating the lungs, in direction V. 5. Let electricity (particularly in accidents from lightning) be early employed by a medical assistant.

If Apparently Dead from Intoxication.—Lay the body on a bed, with the head raised; remove the neckcloth, and loosen the clothes. Obtain instantly medical assistance, as the treatment must be regulated by the state of the patient; but in the mean time apply clothes soaked in cold water to the head, and bottles of hot water, or hot bricks to the calves of the legs, and to the feet.

If Apparenfly Dead from Apoplexy.—The patient should be placed in a cool air, and the clothes loosened, particularly about the neck and breast. Bleeding must be early employed by a medical assistant; the quantity regulated by the state of the pulse. Cloths soaked in cold water, spirits, or vinegar and water, should be kept applied to the head, which should be instantly shaved. All stimulants should be avoided. In cases of *coup de soleil*, or strokes of the sun, the same means to be used as in apoplexy.

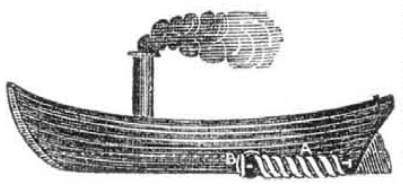
How to Enlarge Vegetables.

A vast increase of food may be obtained by managing judiciously, systematically carrying out for a time the principle of increase. Take for instance a pea. Plant it in very rich ground. Allow it to bear the first year, say half a dozen pods only. Remove all others.—Save the largest single pea of these. Sow it in the next year, and retain of the product three pods only. Sow the largest one the following year, and retain one pod. Again select the largest, and the next year the pod will by this time have trebled its size and weight. Ever afterwards sow the largest seed. By these means you will get peas, (or any thing else,) of a bulk of which we at present have no conception.

History of Propellers and Steam Navigation.

[Continued from page 312.]

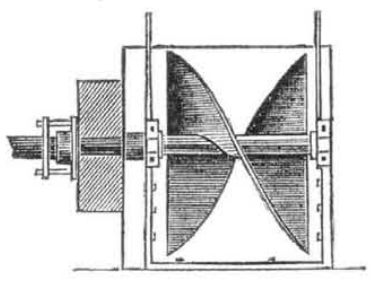
Fig. 63.



It is not possible for us to assign the invention of the screw propeller to the first inventor, whoever he may be. The screw has been claimed by America and England. Mr. Hutchings, in his defence of John Fitch, exhibits his steamboat with side wheels and a screw at the stern likewise. As he writes only from memory, his account is erroneous, for he states that Robert Fulton was on the boat with Fitch in New York in 1776 or '71, whereas Fulton was then in Europe. From all we can gather on the subject, it appears that the screw propeller was propsed in America very many years ago, but the great want of a scientific paper, like the Sci. Am., not being then known, the invention has not been stereotyped as a matter of illustrated history.

The accompanying, fig. 63, was the plan of propeller proposed by Woodcroft, having one spiral, A B, on each side; but this shows merely the place where the screw was placed. The form of the screw was that of an increasing pitch—the correct form: an account of it was first published by Partingdon, in 1834. It was a screw wrapped round a shaft, and the increasing pitch of the blade enabled each part to act upon the water. The principle of this invention consists in making the water a nut and the spiral a screw, acting upon the water, to propel the vessel.

Fig. 64.



It was not until 1839 that the principle of propelling steamships by a screw blade, was fairly brought before the world, and for this we are indebted, as almost every adult will remember, to Mr. F. P. Smith, of London. He was the man who first made the screw propeller practically useful. Aided by spirited capitalists he built a large steamer named the "Archimedes," and the results obtained from her at once arrested public attention. This engraving represents the double threaded screw employed on the Archimedes. A large proportion of the complete screw having no useful effect, a great portion of the central part of this one was cut away, so that the form should offer but little resistance to the water, yet act upon it by the blades, A A, so as to obtain full power in propulsion; but this screw had not a very good effect upon the water, as the arms formed by the ends of the blades obstructed its free passage. Although the trial of the Archimedes was very satisfactory, it was evident that there was a great deal of what is termed *slip* by such a screw, and this fact was always made manifest when the vessel was backed.

We have room on our subscription books for a few more names.

Manufacture of the Chromate of Potash, Lead, and Lime.

Having described some of the uses of the chromate of potash in our last, we now present a new process for the manufacture of the bichromate of potash, which was brought before the Acdemy of Science at Paris a few years ago, and stated to be a cheaper process than the old one.

Mix together in a cylinder moving on its axis, chalk and the mineral chromes, previously reduced to a fine powder, and sifted through very fine sieves, for it is important to the success of the operation, that it should be reduced to an impalpable powder; then calcine the mixture for nine or ten hours at a red heat, on the hearth of a reverberatory furnace, taking the precaution to keep the mass about two inches in depth, and expose the whole of it ten or twelve times to the surface. After a little time, if the flame has been sufficiently oxidizing, the change to oxide of chrome into the chromate of lime will be accomplished; of this you can be certain by its appearance, which should present a greenish yellow colour, and should dissolve completely in hydrochloric acid, with the exception of the silicious particles.—Take this porous and friable mass, grind it, wash it in warm water, and to the liquid, kept continually agitated, add sulphuric acid until the liquor reddens litmus. A total conversion of the chromate of lime into a bichromate is thus effected, together with the formation of a little sulphate of iron. To this liquor add chalk and water, for the purpose of separating the iron. The bichromate of lime undergoes no change. After a short time, allowed for setting, draw off the clear supernatant liquor, which contains only bichromate of lime, and a very little sulphate of chrome. In this state it can be immediately made use of to produce the bichromate of potash, the chromates of lead, muter, or basic, and even the chromates of zinc.

It is fonnd, by the use of this process, that it is not necessary to convert the bichromate of lime into the bichromate of potash to procure the insoluble chromate of lead, zinc, baryta, &c., which fact causes the great economy in the preparation of those products, as it suffers only to make a double decomposition between the bichromate of lime and the acetate or subacetate of lead, the chloride of zinc, &c. As to the bichromate of potash, it may be produced not less easily and not less pure by adding a solution of carbonate of potash, free from soda, to the bichromate of lime, easy to wash, and bichromate of potash in solution, which may be concentrated and crystalized free from organic matters, and without the liberatien of hydrochloric acid.

Chemical Constituents of Iron.

In his evidence before the Strength of Iron Commissioners, says the London Mining Jour., Mr. Morries Stirling states, that iron in its pure state is malleable, and that it is a combination of carbon with iron which produces cast-iron. In addition to carbon, the cast iron in this country contains silica, lime, magnesia, alumina, occasionally some of the phosphates and other admixtures; but iron made from magnetic ores is much purer. The strength of cast iron depends upon its freedom from impurities, and upon the proportion of carbon it contains. The strongest cast iron contains about three per cent. of carbon, or according to Mr. Charles May, when the carben is in the smallest proportion that produces fluidity; a larger proportion tends to make the iron soft and weak, and a smaller hard and brittle. Mr. Glynn states, that the strongest iron generally shows a clear grey, or sligthly mottled fracture, and he considers that the color indicates the combination of carbon with iron which produces the greatest strength. Mr. Stirling states, that while color is admissible as a test of strength, it is not so of chemical constitution, for though dark colored iron is usually brittle, yet black iron when chilled becomes white although it must be supposed to contain the same quantity of carbon; hence, as a general rule, he concludes that color indicates the treatment to which iron has been subjected, and in some cases only the quantity of carbon. Mr. May coincides in considering the question of strength to be very much reducible to the quantity of carbon contained in the iron, as some of the tenderest iron skilfully treated will produce some of the strongest castings. Messrs. Stephenson and Stirling mention that the fluidity of Berlin iron is due to the presence of arsenic, and the latter has observed that manganese mixed artificially with cast iron closes the grain, and is an improvement both to cast iron and steel. On wrought iron the effect of manganese is stated to be to give it the hot-short property, while cold short is produced by the presence of a small quantity of phosphorous; and the admixture of arsenic renders wrought iron hard and brittle.

LITERARY NOTICES.

Graham's Magazine, for July, has appeared upon our table, through the politeness of Messrs. Dewitt & Davenport, Tribune Buildings. It contains a beautiful portrait of Jenny Lind, engraved on steel by W. H. Mote, of London, and is said to resemble the original more perfectly than any other ever presented to the American public. The engraving is a splendid specimen of the art: it also contains an elegant plate of Paris Fashions, a portrait of the Editor, Mr. Graham, a tinted view of Lake Como, which, together with brilliant contributions from Bryant, Whipple, Lowell, Sims, Giles, Tuckerman, Mrs. Embury, and a number of others, makes it decidedly the most complete number in the magazine way ever issued. We heartily wish Graham success—he is worthy of it.

Manual of Health.—About a year since we accidentally met with a small volume published by the "Graefenburg Company," of this city, called the "Manual of Health," and by a slight perusal of it we discovered many testimonials to the work by our first physicians, which induced us to get a copy of the book. We have had the Manual constantly in use in our family since we procured it, and certainly it is the most reliable family physician we ever employed. This book gives the proper remedies to be employed in various diseases, explains the nature of most vegetable and mineral substances used as a medicine, the effect they produce upon the system, and the quantity to be used in the various stages of disease; it also contains elaborate and correct receipts for the manufacture of cologne and lavender water, washes for the teeth, &c.

The "Manual of Health" is an epitome of medical science, and should be in the possession of all, except physicians—and we think it might be read by many of them without impairing their previous knowledge. Copies of the "Manual of Health," containing 300 pages, may be had at this office, bound in cloth, for 75 cents, or sent by mail in paper covers for 50 cents. Address Munn & Co., post-paid, New York.

The Steward—A new romance from the pen of Henry Cockton, author of "Sylvester Sound," "Valentine Vox," and numerous other humorous publications: published by Long & Bro., 43 Ann st., price 50 cents, 200 pages. All patronizers of light literature, will be entertained by reading "The Steward."

No 18 of Shakspeare's Dramatic Works, published by Phillips, Sampson & Co., Boston, is now ready, it contains the play of King Richard II. Price 25cents: for sale by Dewitt & Davenport.

INVENTORS AND MECHANICS.

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